

ENFORCEMENT
SENSITIVE

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IN THE UNITED STATES DISTRICT COURT
FOR THE NORTHERN DISTRICT OF ILLINOIS
EASTERN DIVISION

142778

THE UNITED STATES OF AMERICA,)
)
Plaintiff,)
)
vs.) No. 78 C 1004
)
OUTBOARD MARINE CORPORATION)
and MONSANTO COMPANY,)
)
Defendants.)

The deposition of RICHARD P. BROWNELL,
called by the Defendant Outboard Marine Corporation
for examination, pursuant to notice and agreement and
pursuant to the Rules of Civil Procedure for the
United States District Courts pertaining to the taking
of depositions, taken before Thea L. Urban, a Notary
Public in and for the County of Cook, State of Illinois,
and a Certified Shorthand Reporter of said State, at
the United States Attorney's Office, 219 South Dearborn
Street, Room 1486, Chicago, Illinois 60604, on the
10th day of August, A.D. 1982, commencing at 10:00
o'clock a.m.

PRESENT:

MR. JAMES T. HYNES,
(Deputy Chief, Civil Division
United States Attorney's Office
219 South Dearborn Street
Chicago, Illinois 60604),

and

16-5V28.0/074

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PRESENT: (Continued)

MS. ELIZABETH STEIN,
(Pollution Control Section
Land & Natural Resources Division
Department of Justice
Washington, D.C. 20530),

and

MR. JERROLD H. FRUMM,
(Enforcement Division
U.S. Environmental Protection Agency
230 South Dearborn Street
Chicago, Illinois 60604),

appeared on behalf of the United
States of America;

MR. RICHARD J. PHELAN,
MS. ROSEANN OLIVER,
(Phelan, Pope & John, Ltd.
180 North Wacker Drive
Chicago, Illinois 60606),

and

MR. RICHARD J. KISSEL,
MR. JEFFREY C. FORT,
(Martin, Craig, Chester & Sonnenschein
115 South LaSalle Street
Chicago, Illinois 60603),

appeared on behalf of Outboard
Marine Corporation;

MR. JAMES H. SCHINK,
(Kirkland & Ellis
200 East Randolph Drive
Chicago, Illinois 60601),

appeared on behalf of Monsanto Company;

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PRESENT: (Continued)

MR. JOHN VAN VRANKEN,
MS. BARBARA CHASNOFF,
(Environmental Control Division
Northern Region
Office of the Attorney General of Illinois
188 West Randolph Street
Chicago, Illinois 60601),

appeared for the Attorney General of Illinois.

ALSO PRESENT:

MR. HUGH THOMAS.

- - -

Theo L Urban
Court and Criminal Reporter
174 South La Salle Street
Chicago, Illinois 60603
312-380-6440

I N D E X

WITNESS :

Direct

Cross

Redirect

Recross

RICHARD P. BROWNELL

By Mr. Phelan
(Resumed)

5
79

E X H I B I T S

Brownell-OMC Exhibit

Marked for ID

No. 1

6

No. 2

40

No. 3 - 9

44

— — —

Ther L Urban
 Counselor and Reporter
 170 South 1st, 2nd Street
 Chicago, Ill. 60603

(Witness sworn.)

MR. PHELAN: Let the record show this is the deposition of Mr. Richard P. Brownell, taken pursuant to notice and in accordance with the Rules of the United States District Court, Federal Rules of Civil Procedure.

Before we begin, I would just like to note of record, the dates on which we received your documents, Mr. U.S. Attorney.

Apparently we still have not received them all as of ten minutes ago and the group that you served on us Friday night, I do not know the exact body but none of us have certainly had an opportunity to go through them. I am going to do my best to go through if I can and read some of these documents during the course of the deposition, but I want to reserve the right to reexamine Mr. Brownell after I have completed a review of the documents, which I have not been able to do simply because they have not been proffered to me.

RICHARD P. BROWNELL,
called as a witness herein, having been first duly sworn,
was examined and testified as follows:

DIRECT EXAMINATION

BY MR. PHELAN:

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Q Would you state your full name for the record, please, and spell your last name.

A Richard Paul Brownell, B-r-o-w-n-e-l-l.

Q Mr. Brownell, I have had an opportunity to review your Curriculum Vitae and just have a few questions about it.

That is the Curriculum Vitae that was attached to the Government's partial response to the Defendant Monsanto Interrogatory with respect to expert witnesses and I think we probably ought to mark that as Brownell Deposition Exhibit No. 1.

(Brownell-OMC Deposition Exhibit
No. 1 marked for identification,
8/10/82, TLU.)

BY MR. PHELAN:

Q I will ask you to examine the document, Mr. Brownell, and tell me whether or not it is accurate in all respects; that is Brownell Exhibit No. 1.

A As far as I can see at this brief review, it looks correct.

Q Was that prepared by you?

A Yes.

Q Is there any other information, any documents or any other writings that are not included in here as

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of August 10?

A I don't understand what you mean by writings.

Q Any other writings that you have made or publications that you have been a part of that are not included in Brownell Deposition Exhibit No. 1?

A May I look --

MR. HYNES: Do you mean like articles published, things of that nature?

MR. PHELAN: Anything: Speeches, articles.

BY THE WITNESS:

A Yes, I believe there are a few things in the area of Operations Assistance that I have also performed for several municipal and industrial clients; mainly municipal, that do not stand out in this document, but are referred to indirectly for many of them.

BY MR. PHELAN:

Q Do you want to tell us about it?

A As part of the work that I do at Malcolm Pirnie, occasionally I have also assisted some of our clients. Some of our clients have experienced problems in their wastewater treatment plants.

Q Any recent examples of that?

A Yes. For the Barceloneta Construction Corporation in Barceloneta, Puerto Rico, I have been assisting

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and directing some of my staff, some of the staff at Malcolm Pirnie in assisting in the operations of a wastewater treatment plant which handles predominantly industrial wastes from the pharmaceutical industry and other industries and some municipal wastes.

Q If I might interrupt you, the pharmaceutical industrial waste problems for --

A It is for the Barceloneta Construction Corporation. It is a consortium.

Q What is the name of the pharmaceutical company or is that part of Barceloneta?

A That is, many companies are part of the consortium which is named the Barceloneta Construction Corporation.

Q The municipal corporations that you have dealt with --

A The municipal authorities?

Q Authority, yes.

A It is the Puerto Rican Aqueduct and Sewer Authority in particular.

Q Any others?

A Hampton Roads Sanitation District is noted here. Cleveland, we have noted some things I have done earlier in Cleveland. I have some continuing responsi-

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bilities with Cleveland in the Operations area in Cleveland and in Waterbury, Connecticut.

Q In any other way, is your resume incomplete other than what you have just described to me?

A I don't believe so, nothing significant anyway.

Q You received a Master's Degree at Stanford University in 1967. What was the subject matter of your thesis?

A No thesis was required.

Q Did you write a thesis?

A No.

Q Was there any area that you concentrated on in civil engineering?

A Sanitary engineering, environmental engineering.

Q Did you have occasion to write any papers on any particular aspects of either environmental or sanitary engineering?

A Yes.

Q Were they approved by any department or departments?

A I am sorry, I misunderstood the question. You mean where?

Q At Stanford now and I am referring to your

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Master's Degree.

A No.

Q Did you write any senior thesis at Rensselaer Polytechnic Institute?

A No.

Q You were licensed in New York and Virginia?

A I would like to refer to -- I'm sure it says on there.

Approximately 1971 in New York and 1978 in Virginia.

Q These societies that you list here in Deposition Brownell Exhibit No. 1, the American Society of Civil Engineers, is that by invitation only is it by application?

A By application.

Q Water Pollution Control Federation?

A By application.

Q You list here that you were the author of articles on nitrification, et cetera. Are those listed in any other area or any other place other than just by generic title? You have articles on nitrification and so forth.

Do you have a list of those articles?

A Not with me, but I believe there is a list.

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Q Would you supply one to Mr. Hynes.

Would you give me a quantitative estimate of the number of articles you have written?

A Articles and presentations, about a dozen.

Q Did any of these articles deal with the problem of polychlorinated biphenyls in situ?

A One did indirectly or one did for a small part of it, yes.

Q You don't happen to have that with you, do you?

A No.

Q Where was that given?

A That was given to the Chemical Manufacturers Association as part of a talk on land farming of hazardous wastes and it was given in three locations: Newark, San Francisco and I believe Houston, but I am not sure.

Q When was it given?

A I believe 1979 and 1980.

Q Did you make a speech in connection with that paper?

A Well, the presentation there was what I gave. I have the written words that I spoke.

Q Did you prepare --

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A I believe there were PCBs in there. I would have to check to see if there are PCBs in there. I believe I mentioned the word.

Q Did you prepare anything in advance for the presentation or is what you are telling me simply a transcript of what you said?

A No, I prepared something.

Q Are there any other articles that you wrote in connection with PCBs other than what you have just described?

A I don't believe so.

Q You have a Master's Degree in Business from New York University, is that true?

A Yes, that's correct.

Q That was received in 1976. Was there any particular area of study that you concentrated on in receiving your M.B.A.?

A Management Studies.

Q Any particular area of Management Studies?

A No, that was an area.

Q Was that an executive program or was that a full-time curricular course that you followed?

A Those were regular courses offered at night.

Q Was that in some executive program?

A No.

MR. HYNES: Do you understand what executive program is?

THE WITNESS: I think I do.

No.

BY MR. PHELAN:

Q Did you write a thesis in connection with your Master's Degree in Business?

A No.

Q These articles that you have referred to generically in your Curriculum Vitae and you have just indicated amount to about a dozen, do they date from the time you received your Master's Degree in Engineering up to the present time?

A Roughly.

(Ms. Elizabeth Stein left the deposition room.)

BY MR. PHELAN:

Q According to Brownell Exhibit No. 1, you were with J. Kenneth Fraser and Associates, Rensselaer, New York in 1966.

Was that just during the summer?

A That is correct.

Q You indicate that you wrote a comprehensive

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or were involved in a comprehensive report for wastewater treatment facilities. What facility was that that you were involved in?

A It was for the City of Rensselaer and part of the City of Troy. My efforts focused on the City of Rensselaer and the wastes that it had.

Q Was this a city sewage plant that you were dealing with?

A Yes. It was planning for a city facility.

Q When did you become an officer in the United States Army Corps of Engineers?

A It is hard to forget actually. I was commissioned in 1966, did not go on active duty until 1967.

Q When did you begin active duty in 1967?

A In the summertime.

Q That is after you got your degree from Stanford?

A That is correct.

Q Were you an officer for the Republic of Korea as well?

A No, I was assigned in the Republic of Korea.

Q As well as California?

A That's correct, yes.

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Q As well as California?

A That's correct, yes; not simultaneously.

Q The rest of your professional career, you have spent with Malcolm Pirnie besides three months with Fraser and the commission for the Corps of Engineers?

A That is correct.

Q According to your resume, you were involved in major pilot/prototype studies for American Cyanamid and Lederle involving activated sludge?

A Yes, that is correct.

Q The sludge that you were studying, was that the by-product of Cyanamid or Lederle, did they create the sludge?

A May I see the Curriculum Vitae?

Q Sure.

A This refers to the biological sludge that was created as a result of the biologically mediated oxidation of the organic carbon constituents in their primary treated wastewater.

We also looked at some of their primary sludges which contained solids admitted from the production facilities.

Q In any of those projects, was the PCB a part

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of the sludge?

A Excuse me, which projects are you referring to?

Q The ones we just discussed, the sludge project for American Cyanamid and Lederle.

A I do not believe so.

Q You show yourself as a Project Manager directing in the design of a wastewater facility expansion for the Upjohn Company and Scott and approximately 20 corporations in the paper, pharmaceutical, organic chemicals, food, private utility, computer and metal finishing industries.

Did any of those include PCBs in their wastewater facility expansion studies?

A None of the studies that I did in that period as Project Manager were oriented towards treatment or measurement of PCBs because to the best of our knowledge, there was no PCB problem associated with any of these wastes at that time.

Q In the organic chemicals or pharmaceutical, were any PCBs alleged to have been present?

(Brief interruption - phone call.)

MR. HYNES: Excuse me, could you please read the

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question?

(Question read.)

BY THE WITNESS:

A Not to the best of my knowledge.

I take that back. There was one where one of the projects that I worked on, it was raised as a possible allegation and I believe there was a limited amount of testing done which indicated -- that's where I can't remember whether there were very low trace amounts present or none present. It's been a while.

BY MR. PHELAN:

Q What is the difference between a project officer at Malcolm Pirnie and a project manager?

A A project officer is usually a vice president in the company and assumes more contractual and financial obligations relative to the management of projects, in addition to being responsible for the technical quality and the important technical aspects of the projects that are managed by others on a day-to-day basis.

Q Maybe I should back up.

Would you describe what Malcolm Pirnie is?

A Malcolm Pirnie is a consulting environmental

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engineering firm. We are environmental engineers, scientists and planners.

Q Where is Malcolm Pirnie located?

A White Plains, New York is our main office and we have approximately ten other offices in the United States and overseas.

Q Do you have any offices in the Midwest?

A We have an office in Columbus, Ohio.

Q How many professional persons are employed by Malcolm Pirnie?

A I believe the number is over 300.

Q Is Malcolm Pirnie a corporation?

A Pardon me?

Q Is it a corporation?

A It is a Sub Chapter S corporation.

Q Do you have stock in Malcolm Pirnie?

A Yes.

Q Is Malcolm Pirnie at the present time under contract with the United States of America?

MR. HYNES: Wait a minute. That is a little broad. Why don't you say something like an agency of the United States of America. I don't think there are too many contracts written with just United States of America.

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BY MR. PHELAN:

Q Do you have any contracts with the United States, any United States Agency?

A Yes, I believe we do.

Q Could you tell us what they are?

A We have some projects with the Corps of Engineers and I believe we have a small direct contract with the U.S. EPA on the investigation of a liner.

Q Of what?

A A liner.

Q Where?

A That is for a confidential client. The site is confidential and the client is confidential.

However, EPA has agreed that they want a piece of these folks' liner since it is being replaced and they want to investigate it for various techniques, so we are going to sample the liner and assist in gathering the liner and making sure the liner gets to the right place so that stress tests and other tests can be performed on it by others.

Q The liner is a liner that is supposedly containing some materials, toxic materials?

A The liner is from a lagoon which contains predominantly gypsum sludge, but in the interstitial

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water, there are small trace amounts of some organic chemicals and also inorganic constituents such as ammonia.

Q You know and I know that because EPA says it is confidential doesn't mean it is confidential.

They have asked you to treat it confidentially?

A No, our client who's providing the liner has asked us to handle it confidentially. He is willing to provide the liner, but doesn't want to share in the glory afterwards.

MR. PHELAN: Thea, would you mark your notes at that point. I will come back to this and we may decide it is not relevant, but at least we will make a record.

MR. HYNES: Could I clear up one thing?

Whether or not Malcolm Pirnie is being hired by the client or hired and paid by the EPA for this work?

BY MS. PHELAN:

Q You are being paid by the liner --

A In that particular work, I have to check exactly who we have the contract with. The contract emanated from the EPA. I am not sure if we have a direct contract or a subcontract.

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Q But the liner person is the one asking you to keep this confidential?

A The person that has the liner.

Q Not the EPA?

A That is correct. I have confidentiality agreements with that person.

Q But it is your understanding that your firm was hired by the EPA?

A It is my understanding. This is a very small project.

Q The Corps of Engineers, do you have some Corps project with them right now?

A The firm does, yes.

Q Give us some idea of the magnitude of those.

A In what way?

A Money.

A Money. I believe we have one quarter of a million dollar project, approximately, that we have just completed on the establishment of possible sites for disposal of contaminated dredged spoils for the New York Corps.

Q Is that the Hudson River contract?

A That would be the Lower Hudson.

Q Any others?

A Yes. We have a contract and it may even be -- I'm not sure of the mechanics. Mr. Henningson probably can clarify, but we are also working with them on doing a partial environmental impact statement on the striped bass in the Lower Hudson and what is the significance of the inter-pier breeding and growing area.

Q This is in relation to the PCBs allegedly in the Hudson River?

A No, this is in relation to the construction of the West Way.

Q What is the magnitude of that study dollar-wise?

A It is smaller than the first. I would say roughly one-fifth the cost, but I am not positive.

Q Any others?

A I don't believe that we have other direct contracts. We do have a subcontract with Temple, Barker & Sloan out of Boston and they have a contract, I believe, with the U.S. EPA to study and evaluate techniques to remove volatile organic constituents from waters that may be used as drinking supplies, predominantly ground waters.

Q Any other?

A We have a contract with the Hashameit Kingdom

of Jordan and the Arab Republic of Egypt, both of which are indirectly supported by the American International Development Organization, so I guess that would be technically an arm, indirectly technically an arm of the Federal Government.

Q The nature of those projects is what?

A The project in Jordan is wastewater planning for municipal industrial wastes in the Zarqa-Ruseifa, Z-a-r-q-a dash R-u-s-e-i-f-a, area, I believe, and in the Arab Republic of Egypt, I'm not sure whether we are doing wastewater planning or drinking water planning or both.

Q Have you now given me an oral list of the agencies of the United States Government that Malcolm Pirnie is presently dealing with under contract, either directly or subcontract?

A Yes, I believe I have.

Q Has Malcolm Pirnie in the past worked for other agencies of the United States Government?

A I can't say for sure.

Q How old a corporation is Malcolm Pirnie?

A The corporation was formed roughly 12 years ago, partnership that dates to 1929, the principal engineer of which was associated with other firms that

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go to the turn of the century.

Q Just beginning from '29 up to the time it was a corporation, was its principal focus wastewater treatment facilities?

A Its principal focus has always been environmental engineering and that would encompass water, wastewater, solid wastes, air pollution.

Q What other firms do you recognize as people in the same business that you are?

A Recognize in what?

Q Who you recognize as being in the same business that you are in, other firms, corporations, partnerships?

MR. HYNES: You mean by name?

MR. PHELAN: Yes.

BY THE WITNESS:

A Irrespective of --

BY MR. PHELAN:

Q Who is your competition?

A I don't --

Q In what you do: Wastewater treatment facilities.

MR. HYNES: You want his opinion on whether they are good, bad or indifferent, or just a litany of their competition?

MR. PHELAN: Yes, who they are.

BY THE WITNESS:

A What particular area?

BY MS. PHELAN:

Q Your principal focus is wastewater, environmental wastewater treatment facilities, sludge, environmental --

A Say that again slowly.

Q I am just repeating what you told me was your principal focus of the partnership and I am asking who is your competition.

A Well, in each area we have competition. The list would differ for each component that I gave you. The list could be hundreds of names.

Q Is there any firm that does everything you do in all of the areas you discussed already with me?

A Yes, there are many. But I don't think there are many that do them as well.

Q That may be.

How many firms are there that do what you do? How many of them actually have people who operate and function in the various areas you have just described?

A Described, you mean that the firm does?

Q No. You have described previously the functions

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of your firm.

A Yes.

Q How many other firms have all of those same functions?

A I would say there are many.

Q Just name me a couple.

A Roy F. Weston; Camp, Dresser & McKee; Metcalf & Eddy; Black and Veatch; Engineering Science, Incorporated; CH2M-Hill.

Q You didn't mention Mason and Hanger. Do they do the same thing that you do?

A I am not really familiar with Mason and Hanger.

Q Incidentally, in these projects that you have either been project manager or project engineer, did you oversee the project rather than actually have people who did the project?

A Well, as project engineer, I would be doing most of it myself with perhaps someone else.

Q I am referring now to the actual project, the sludge being treated or processed.

A Excuse me. Which project are you referring to because it varies with the project.

(Interruption - telephone.)

BY MR. PHELAN:

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Q Let us take the Lederle Laboratories Division.

A Yes.

Q Where high purity oxygen activated sludge was studied.

A Yes.

Q Was there a project that emanated from that study to do something?

A A contract that emanated from it for construction?

Q Yes.

A Yes.

Q Did you provide the people to actually do the construction or did you just simply oversee it?

A The question will have to be rephrased or something. I don't think it is pertinent to consulting engineering.

Q Do you have a construction company that works with you?

A No.

Q You don't purport to be able to do any of the projects that you yourself studied and compiled as engineers?

A What do you mean by doing?

MR. PHELAN: Doing in terms of performing.

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MR. HYNES: In terms of actual construction work?

MR. PHELAN: Yes.

THE WITNESS: Could you repeat?

BY MR. PHELAN:

Q Do you do the work that you recommend that somebody ought to do?

A We do not construct the work that we design.

Q You don't do the work. Somebody else does that and I presume you either supervise it or oversee it or certify it or check it out?

A Yes, that is a reasonable statement.

Q Do any of these firms that you have mentioned who have functions in all the areas that you do, do they do any of their own work or is that like your firm, contracted out for someone else to do?

MR. HYNES: Again you are referring to the construction?

MR. PHELAN: Right.

BY THE WITNESS:

A To the best of my knowledge, no.

BY MR. PHELAN:

Q Very quickly, can you tell me: You were project engineer, project manager, project officer and now vice president.

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Can you give me the dates when you were in these various positions?

A I will have to take a pause for a minute and count back the years.

Q How long have you been vice president?

A Approximately four years.

Q And as vice president in charge of Malcolm Pirnie's hazardous wastes and industrial wastes process development groups, to whom do you report?

A The president, John Foster.

Q In the hierarchy of Malcolm Pirnie, is there an executive vice president?

A I don't believe so.

Q The Chairman of the Board of Malcolm Pirnie is who?

A Malcolm Pirnie, Jr.

Q How many vice presidents are there, presently?

A About 15.

Q You are attached to what office, Mr. Brownell?

A White Plains.

Q How many persons report to you?

A It varies from time to time; approximately ten at the moment.

Q Are those all professionals?

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A Yes.

Q I take it you wrote Brownell Exhibit 1 yourself?

A Most of it, yes.

Q Give us an idea of how many projects you have directed for site evaluation, groundwater pollution, remedial measures for hazardous waste problems?

A I would say about ten, not all of them being necessarily all of those things.

Q When you say you have directed a project, is that just the design engineering project, or is that the actual construction project?

A That is mainly the evaluation and in some cases the design; mainly the design. I don't believe there has been any serious role on my part to oversee the construction.

Q Have any of the projects that you have directed for purposes of evaluation or design gone on to construction?

A May I see that?

Q Yes.

A One project where we were trying to remove trace organics from groundwater and proposed a stripping tower, that has now been designed by the client. We

laid out the process criteria and he was able to put the parts together and build it himself.

Q Did you supervise the construction?

A No.

Another project in the industrial waste area involved a closure of a fly ash landfill and that has gone through design and into construction.

Q Who supervised that?

A I did not supervise the construction. The client did.

Q Has any project that you directed for evaluation or design that has gone on to construction been supervised by you or overseen by you or Malcolm Pirnie?

A Yes, by Malcolm Pirnie, but not by me, not in the hazardous waste area. There have been some industrial waste projects where I have been responsible for overseeing construction.

Q Which ones are those?

A There is a project for an equalization tank for food processing wastewaters that has been constructed and I was responsible for overseeing construction.

There was a project that involved neutralization of hazardous wastes and some equalization -- I take it back, what I said earlier -- where I was

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responsible for assisting the client in the management of the construction. That has been completed.

There's one or two more. There are one or two more and I can't recollect what they are.

There is a project for a clarifier that is about to enter construction where I am responsible for overseeing the construction, where I will be responsible for overseeing the construction.

Q Would that also include making sure the project came within the budget estimates of the contract?

A I am not sure I really understand.

Q To see it gets done for whatever it is that people agreed to do it for?

A We have a role in assisting in that, accomplishing that function.

Q But you are not responsible for it?

A Sometimes we are and sometimes -- generally I would say we are not, but we have a definite role which influences it.

Q But you don't pay if it goes over budget?

A That is a fair assessment, although certainly we are concerned about the shift in the litigation area that some people suggest, that it seems anyway some

people are suggesting that engineers should do that, but we don't agree with that.

Q Have you directed any project involving treatment of PCBs in sediments?

A Yes, part of a project.

Q Which one is that?

A The Upper Hudson River.

Q Any other projects other than that one?

A We have another project the office is doing where I have reviewed what was done in another office which deals with the contamination of soils with PCBs and what are the appropriate remedies.

Q Where is that located?

A That is in the Buffalo area.

Q What stage is that at right now?

A The client has proceeded to initiate the recovery of groundwater and has installed an activated carbon system and filter system which he installed himself by means of our guidance and has that operational, and the removal -- well, the investigation and evaluation of what should be done, I believe, is complete and we need some State approvals prior to initiating removal of any appropriate materials.

Q What is the --

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A There's a third. That was soils. That was all.

Q What is the anticipated value of the ground-water treatment facility?

A I don't remember.

Q As vice president for the past four years, has your involvement been as your dossier states with hazardous wastes and industrial waste process development groups?

A Yes.

Q How much of the time have you spent in hazardous waste areas?

A Roughly a quarter, I suppose industrial wastes and some operations.

Q Have you done any hazardous waste treatment facility projects in harbors?

A Would you repeat the question?

(Question read.)

THE WITNESS: What do you mean by done?

BY MR. PHELAN:

Q Have you designed any projects in which a harbor is a part?

A No.

Q You have been involved, according to your

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Curriculum Vitae, in industrial sludge removal from lagoons.

A That is correct.

Q Are those artificial lagoons?

A They were man made, yes.

Q How long were you project officer at Malcolm Pirnie?

A For the same four years.

Q Did that overlap, vice president and project officer?

A Yes.

Q Your appraisal of the PPB contamination for Ameribrom was done where?

MR. HYNES: You said PPB?

MR. PHELAN: I mean PCB.

BY THE WITNESS:

A Sayreville, New Jersey.

BY MR. PHELAN:

Q I take it from 1978 back, you have been either project manager or project officer for Malcolm Pirnie?

A That is correct.

Q When was Malcolm Pirnie retained by the United States Attorney in this matter?

A Several months ago.

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Q Can you give me an exact date?

A No, not at the moment.

Q It is now August. Were you retained in June?

A Yes, approximately June.

Q Were you retained by letter or by telephone conversation?

A Basically by telephone conversation.

Q Who was the person that retained you?

A I am not sure. It was Jim Hynes or Jim White.

Q They will be glad to know they look so much alike it is hard to distinguish them.

MR. HYNES: It's hard to tell us apart.

BY MR. PHELAN:

Q Tell me what you were told or what you agreed to do when you spoke to Mr. Hynes or Mr. White on the telephone?

A We agreed to review whatever appropriate information was available and to try and develop feasible options from an environmental engineering point of view which would address the situation in Waukegan Harbor.

Q Did you ever confirm that by letter?

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A I don't believe so, no.

Q How were you to be compensated?

A In accordance with our standard rates.

Q What are your standard rates?

A Our standard rates relate to the amount of hours that are put in on a particular project times the actual salary that we pay an individual times a 1.36 multiplier for fringe benefits times a 2.25 multiplier for overhead and profit for all situations except depositions and trial testimony.

For the extra effort involved in that, we use a multiplier of 3 instead of 2.25.

Q Will you tell me how that works?

A In what way?

Q You take the salary of the individual and divide it by 1800 hours or 2,000 hours?

A We would divide it by the --

MR. PHELAN: Off the record.

(Discussion off the record.)

THE WITNESS: Yes, we would use 2,000 hours.

BY MR. PHELAN:

Q Just taking an example, the salary is 40,000, so that is \$20 an hour?

A Yes.

Q Then?

A Then we multiply by 1.36 and then multiply the result by 2.25. If you want to cheat, you can use 3.06 times \$20 and get there quicker.

Q The 3.06 includes the fringe benefits and --

A That is correct.

Q That is the total number?

A Expenses would then be added on top of the unit charges.

Q So for your time and Mr. Henningson, all we need to know is your salary and we multiply that by either 3.06 or 2.25?

A No, I'm sorry. We multiply either by 3.06 or for the purpose of deposition, when I am actually being deposed on the stand, then we would use a higher multiplier and that would be 3 times 1.36 times salary which would be a little over 4.

Q Give us an idea what you are being paid for your deposition today per hour. What is Malcolm Pirnie's charge to the U.S. Attorney?

A Well, the charge for -- let me answer it in two parts, if you will.

The charge for the bulk of the work that I have done up to this point prior to today is about

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\$100 an hour and the charge for today will be about \$135 an hour, roughly.

Q How much have you already charged the U.S. Attorney for the services you have already performed?

MR. HYNES: He personally, his personal work or Malcolm Pirnie?

MR. PHELAN: Let us make it Malcolm Pirnie.

BY THE WITNESS:

A I will have to, it will be easier for me to answer another way.

Up to this point, I would have to say we have accrued approximately \$50,000 of charges of which we billed, I believe, \$30,000.

BY MR. PHELAN:

Q Is Mr. Henningson's rate for depositions hourly about the same as yours?

A I think it is slightly lower.

Q In your conversation with either Mr. White or Mr. Hynes, you agreed to review the appropriate materials. Have you kept a list of the materials that you reviewed?

A Yes, we have a bibliography that we have prepared which included the documents that we received from the U.S. Attorney.

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(Mr. Richard Kissel entered
the deposition room.)

BY MR. PHELAN:

Q Do you have that with you?

A The bibliography, I see you have a copy here.

MR. PHELAN: Thea, why don't we mark this document
as Brownell Exhibit No. 2.

(Brownell-OMC Deposition Exhibit
No. 2 marked for identification,
8/10/82, TLU.)

BY MR. PHELAN:

Q Mr. Brownell, would you examine Brownell
Deposition Exhibit No. 2 and see if it contains all of
the documents that you reviewed in preparation for your
testimony and your evaluation for your testimony.

A I believe it contains all the documents that
either myself or Mr. Henningson reviewed prior, in
preparation for our depositions.

Q Deposition Exhibit No. 2, for example, refers
to the first one. WK is Waukegan, is that short for
Waukegan?

A Yes.

Q Waukegan Roman Numeral I - 100 is a published
report entitled the PCB Contamination, Waukegan, Illinois.

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The authors are the U.S. EPA, Region V.

That is what Brownell Deposition Exhibit No. 2 is, the first insert, isn't it?

A Yes.

Q Do I assume that either you or Mr. Henningson have read that document completely?

A It is fair to assume that either one of us have read it.

Q Entirely?

A Yes. I can only testify for myself at this point. I have not read all of those documents in totality.

Q But you are relying on the fact that Mr. Henningson has read them in totality?

A The ones that I haven't read, right.

Q Is that right?

A Yes. And some of the documents we both read in totality. Most of them, we only read them about once or so.

Q Did you make any notes: For example, WK I - 100, the PCB Contamination in Waukegan, Illinois by U.S. EPA?

A I did not.

Q Do you know whether Mr. Henningson did?

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A I have no idea.

Q You made no notes whatsoever in this particular report?

A That's correct.

Q In others that you have read, have you made notes?

A Not very many. Most of the notes, the background information that we looked at there, we did not make many notes on, no.

Q The notes that you made, did you retain those?

A I don't believe I have them. I didn't use them very much.

Q Did you retain them?

A Not to the best of my knowledge, no.

Q You destroyed them?

A Whatever few there were probably were thrown out as being useless.

Q So you didn't --

A In preparation for our deposition, I should say.

Q So you did not retain them and they are gone now?

A I believe so.

Q Is Brownell Deposition Exhibit No. 2 the

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totality of your work product in this matter at this point?

MR. HYNES: You mean other than these other documents that were provided to you?

MR. PHELAN: You mean all of the other thousands of pages?

THE WITNESS: No, they're only hundreds.

Yes, there are some backup calculations associated with some of these that may still exist.

MR. PHELAN: Let us mark this Malcolm Pirnie document dated August 4, 1982 from J. B. Mulligan to R. P. Brownell as Brownell Deposition Exhibit No. 3; Brownell Deposition Exhibit No. 4, a report from Judith A. Bedard to John C. Henningson dated July 7, 1982; as Brownell Deposition Exhibit No. 5, an inter-office correspondence from S. A. Roberts to J. C. Henningson dated July 21, 1982; an inter-office Malcolm Pirnie correspondence to Harris from Henningson, July 9, 1982 as Exhibit No. 6; Brownell Deposition Exhibit No. 7, interoffice correspondence to Brownell from Shahabian, August 5, '82; and finally, Brownell Exhibit No. 8, what looks like notes on Malcolm Pirnie's mast-head; subject, Volatilization, August 5, 1982, and as Brownell Exhibit No. 9, interoffice correspondence

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from Brownell to Henningson dated August 5, 1982.

(Brownell-OMC Deposition Exhibits
Nos. 3 through 9, inclusive, ●
marked for identification,
8/10/82, TLU.)

BY MR. PHELAN:

Q Have you looked at Deposition Exhibits 3
through 9?

A Briefly, yes.

Q Can you tell me whether those Deposition Ex-
hibits 3 through 9 represent the work product of Malcolm
Pirnie on the Waukegan project?

A Yes.

Q Are there any other documents that you have
generated, you being Malcolm Pirnie, other than Depo-
sition Exhibits 2, 3, 4, 5, 6, 7, 8 and 9?

A With the exception of possibly some backup
calculations to some of these, no.

Q Does Brownell Deposition Exhibit No. 2 contain
a list of all the documents that you reviewed, read and
analyzed in connection with your assignment for Mr.
Hynes or Mr. White?

A When you say you, you mean --

Q You meaning Malcolm Pirnie.

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A To the best of my knowledge, yes.

Q Are the documents that are referred to in Brownell Deposition Exhibit No. 2 part of the documents that the U.S. Attorney has furnished us?

A I'm sorry. I'm not sure what the U.S. Attorney has provided.

Q So you cannot answer the question?

A I don't believe I can.

Q For example, under Waukegan Project, Deposition Exhibit No. 2, Roman Numeral VI, Waukegan document description sheet WK VI-100, there is a reference to United States Department U.S.D.A., would be the United States Department of Agriculture?

A I believe so.

Q Soil Conservation Service entitled Soil Survey of Lake County, date September 7, 1970.

Do you know whether in fact that was furnished to us?

A I have no knowledge.

Q In connection with your review here and you being Malcolm Pirnie, who furnished you with the documents that are referred here in Brownell Deposition Exhibit No. 2?

A The documents came from two major sources.

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The first source was the U.S. Attorney's Office and the second was internal documents and other information we already had in our possession.

Q When you had the conversation with Mr. Hynes and Mr. White, did he tell you, whoever that was, that you could review everything you wished to review in addition to the documents they furnished to you?

A Yes. He indicated that in addition to what he provided or his office provided, that any other information we had access to, that we should feel free to review.

Q Prior to June 1982, had you ever met or talked to Mr. White or Mr. Hynes?

MR. HYNES: You say June was an approximate date. You are using, I assume, June as the approximate date?

MR. PHELAN: Do you have a better one?

BY THE WITNESS:

A Using June as the approximate date, prior to that time I had not met Mr. Hynes or Mr. White.

BY MR. PHELAN:

Q Would you be kind enough to tell us the content, if you recall it, of the conversation you had with Mr. Hynes or Mr. White initially?

A The you will have to be Malcolm Pirnie. Mr.

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Henningson had that initial conversation.

Q Did Mr. Henningson tell you what that conversation involved?

I am asking did he.

A I believe so, yes.

Q Tell me what it is he told you about the initial conversation.

A That the U.S. Attorney's Office would hire us to form an evaluation of the information in the Waukegan Harbor situation and that we would be allowed and encouraged to look at all feasible and viable options whatever to mediate the problem such as it may be. That was from an environmental engineering point of view.

Q Had you agreed at that time, had Mr. Henningson agreed on behalf of Malcolm Pirnie to give the U.S. Attorney certain opinions?

MR. HYNES: I'm not sure, certain opinions?

THE WITNESS: Yes, I'm not sure, certain opinions.

BY MR. PHELAN:

Q Had you agreed to give him an opinion, the U.S. Attorney?

A We agreed to give the U.S. Attorney our opinion as to what we considered to be viable options.

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Q Did Mr. Henningson tell you how it was that the U.S. Attorney contacted you, you being Malcolm Pirnie?

A Yes.

Q How did that come about?

A I believe there was an earlier telephone conversation from U.S. EPA Region V asking whether we wished to be hired by them to perform essentially the same type of activity.

And we felt that that would not really be appropriate. We would prefer to work for the U.S. Attorney's Office.

Q Why did you think it was inappropriate to work for the U.S. EPA Region V and appropriate to work for the U.S. Attorney?

A Two reasons: The first was and the most important, probably, was in our dealings with the EPA in the past, the contractual hassles that you have to go through to get a project going weren't worth the effort. I guess that really was the main reason.

Q You mean you didn't get paid?

A We always got paid and some of us have lived long enough -- scratch long enough.

Q I take it from your answer, the U.S. Attorney

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seems to be a more likely reliable credit risk with the agency than the U.S. EPA?

A Yes.

Q The original conversation, who was that with at the EPA?

A I don't remember who Mr. Henningson said that was with.

Q Tell us if you can, did you then have another conversation with Mr. Hynes or Mr. White about the exact nature of the project that the U.S. Attorney wanted you to undertake?

A Yes.

Q When was that conversation?

A Approximately in a few weeks or a week or two after the initial phone call, say a week. John Henningson and I both came out here on a day trip, field trip to listen to what information the U.S. Attorney thought they had and what they really felt that we should be looking at and it was a short meeting because in essence, they said we have information and we want you to look at all the feasible options and give us an opinion as to what the feasible options are.

Q Who was present at the meeting?

A I believe Mr. White, Mr. Hynes. I believe

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there was an attorney from the EPA present also.

Q You don't remember who that person was?

A No.

Q At that meeting, did you take any notes as to what Mr. Hynes and Mr. White wanted you to do?

A I believe so. I believe I did.

Q You don't have those notes?

A I may still have that page.

Q Can you tell us how Mr. Hynes or Mr. White, whichever you recall, described the problem in Waukegan?

MR. HYNES: Objection, irrelevant.

BY MR. PHELAN:

Q Can you recall?

A Yes, parts anyway.

Q First tell us -- this is Mr. Hynes.

A I recognize him.

Q What did he say, how did he describe it?

A He turned it over to Mr. White, I believe.

Q How did Mr. White describe it?

A As I recollect and my recollection is vague, Mr. White indicated that a lot of studies had been performed in the Waukegan Harbor area. Information was available which indicated that there were hundreds of thousands of pounds of PCBs if not a million pounds

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that was in the Harbor or in soils immediately adjacent to the Harbor.

EPA had spent a lot of time and effort trying to define the nature of the situation and had presented the U.S. Attorney with their information and requested that the U.S. Attorney litigate it.

Mr. White indicated that after reviewing the information and because of the complexities of the problem, he desired a second opinion and that's the best I can recollect.

Q Did either or both of them volunteer to give you the first opinion that they had?

A No.

Q You have never seen the first opinion given to the U.S. Attorney or the EPA?

A I am not sure what exactly you are referring to.

Q You said you were told by Mr. White to give them a second opinion.

A Yes.

Q I am asking you: Have you ever read or seen the first opinion?

A The first opinion offered by --

Q Whomever.

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A By whomever? No, I don't believe I have.

Q Do you know who it was that gave them the first opinion?

A To my understanding, Mason and Hanger gave them the first opinion. They gave EPA, U.S. EPA the first opinion.

Q You have not read any reports they have written in connection with the Waukegan Harbor situation?

A I have read several reports they have written or parts of reports they have written relative to the situation in Waukegan Harbor, but I do not recollect ever reading anything which indicated what their opinion was.

Q The Mason and Hanger reports that you read and reviewed are contained in Brownell Deposition Exhibit No. 2.

A Yes, that is correct. There is one document in there. I believe it is one of the first ones and that is a synopsis of the situation and I believe it generally describes options or types of actions that might be contemplated.

I don't believe it had a recommended opinion, a specific one. Certainly I don't recollect one.

Q How long did the meeting that you had, the field trip that you had out here in Chicago last?

A Two hours.

Q What else was discussed at the two-hour meeting?

A Well, I believe what I said earlier is a fair assessment of the items that were discussed.

Q Did you review any documents at this two-hour meeting?

A No.

Q Did you ask any questions as to the amount of the alleged PCBs that are in Waukegan Harbor?

A No, we didn't have to. We had, as I indicated, and I'm not sure which document it is, but there is one document. It is one of the ones in there.

There is one document that was a synopsis that was public information that we had in our possession for a year or two which indicated that there were lots of PCBs out there in the Waukegan Harbor area, hundreds and hundreds of thousands of pounds.

Q Did you consider those reports to be reasonably well done that indicated there were hundreds and hundreds of thousands of pounds of PCBs there?

A Yes.

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Q What was it about them you thought made them reasonably reliable?

MR. HYNES: Wait. You say reports. Are you referring to reports they had in their possession for a year, year and a half?

MR. PHELAN: Right.

MR. HYNES: Do you understand the question?

THE WITNESS: The synopsis report?

I was referring to all the information we looked at here.

MR. HYNES: Your question was specifically a report they had in their possession for like a year.

BY MR. PHELAN:

Q When you came down to talk to Mr. Hynes and Mr. White, you had already reviewed a report that was in the possession of Malcolm Pirnie?

A Yes.

Q What was the name of that report?

A I don't recall.

Q You believe that report was done well enough so that in your opinion, you felt there were allegedly 100,000 pounds or more than 100,000 pounds of PCBs in Waukegan Harbor; that that was a reasonably accurate figure?

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A We felt that that was a reasonable possibility.

Q Why?

A We saw no reason why there shouldn't be such amount out there. We certainly had seen it elsewhere, other situations.

Q Where had you seen it?

A We know in the Upper Hudson there are hundreds of thousands of PCBs in the Upper Hudson River.

Q How were the hundreds of thousands of pounds of PCB measured in Waukegan Harbor?

A You are talking specifically now that report?

Q Yes, your report, the one you read before you talked to Mr. Hynes and Mr. White.

A I can't recollect. As I indicated, that was a synopsis.

Q Do you recollect that any of these reports indicated people actually measured and actually found over 100,000 pounds of PCB in the report?

A Any report that contained this?

Q No, the one you read before coming here. ●

MR. HYNES: That synopsis report.

MR. PHELAN: The one you can't remember.

BY THE WITNESS:

A Could you say the question again?

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BY MR. PHELAN:

Q I am just repeating, Mr. Brownell, exactly what you said. You came out here and you had in your possession or Malcolm Pirnie, a report on PCBs in Waukegan Harbor. That report indicated there were over 100,000 pounds of PCBs, at least, in Waukegan Harbor.

A Yes.

Q My question was in reviewing that report, how did they determine there were over 100,000 pounds of PCBs in Waukegan Harbor?

A I am not positive, but I believe they said they had done testing.

Q At the time you read the report, whatever testing they had done was adequate to satisfy your opinion that that was at least a reasonably accurate assessment of the amount of PCBs in Waukegan Harbor?

A No, I don't believe I said that. I believe I said that that document satisfied my feeling that there was a reasonable possibility that there could easily be that much there.

Q Had you yourself ever been involved in a project where you were testing to determine the amount of toxic substance?

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A Yes.

Q Had you ever been involved in a project where you were testing exact amounts of PCBs?

A Yes.

Q What project was that?

A Part of the Upper Hudson project.

Q Is that based on estimates given to you by others or was it based upon your actual sampling of the Upper Hudson?

A In some cases, we had samples collected by others. In some cases, we collected our own samples and samples were brought to our own laboratory and were analyzed in our laboratory.

Q These samples established that there were some PCBs in the samples?

A That is correct.

Q How did you project the total amount of PCBs from those samples?

A By using grid networks and also extrapolating where we didn't have grid networks.

Q Extrapolating what?

A If we had a series of samples from one place, we would take a look at the data we had and try and average the results over the core that were in the

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vertical plane and what we considered a reasonable area of influence represented by that particular sample, averaged the amount of PCBs that was in that horizontal plane sector that we decided was appropriate to use.

Q Has there ever been a case where the amount of PCBs that was estimated to be in certain places had in fact been determined to be incorrect?

MR. HYNES: Do you understand the question?

THE WITNESS: I think I do.

BY THE WITNESS:

A I think within the normal ranges of acceptable ranges of scientific and engineering techniques, yes.

BY MR. PHELAN:

Q Where?

A We, I believe, made some reasonable estimates on the Upper Hudson.

Q But you have not dredged it yet, have you?

A Part of the Upper Hudson has been remediated.

Q What do you mean by mediated?

A Remediated.

Q In those areas where you remediated it, have you confirmed that your estimates were correct?

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A We confirmed that our estimates were reasonable and I think quite acceptable.

Q How far were they off?

A I don't recollect, but they were not to the pound.

Q Were there any other documents that you had read or used to refresh your recollection or to prepare for this meeting with Mr. Hynes and Mr. White other than this synopsis of that report you cannot recall?

A I don't believe so.

Q Did you bring your experience in the Upper Hudson to bear on this problem that Mr. Hynes and Mr. White asked you to study?

A Yes, among all of our experiences with PCBs elsewhere.

Q And where you did bring that to bear on this particular Waukegan project, did you include any of those documents in Brownell Deposition Exhibit No.2?

A We believe we have.

Q So we are likely to find some references here to the Upper Hudson project?

A Absolutely.

Q Is the nature of the Upper Hudson project in

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your opinion similar to the "Waukegan Project"?

A I have never -- I have been waiting all my professional career to see a project that is totally similar to another project, but this particular project certainly has some aspects which are similar.

Q Have you made any studies of PCBs at Malcolm Pirnie?

A Myself personally?

Q Yes.

A Yes. Yes, I have.

Q Have any of those studies dealt with its toxicity?

A No, not that I've done personally.

Q Has Malcolm Pirnie done any studies on the toxicity of PCBs?

A I believe that we have reviewed the literature relative to the toxicity of PCBs. I believe that in the draft environmental impact statement which is one of the documents in here, you will find a synopsis of what we have found.

Q Have you done any studies yourself on the toxicity of PCBs other than to read the reports of others?

A I personally have not.

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A I believe that we indicated we would like to take a look at that as one of the first steps and see if the existing information would be adequate. If it was, then we would not request any additional tests. If it wasn't, then we would make our request.

We made no such requests.

Q Did you tell Mr. White or Mr. Hynes that you would reduce your opinions to writing?

A Yes.

Q Did you?

A We reduced our opinions to writing -- well, let me back up. I take that back.

We indicated to Mr. Hynes and Mr. White that we had come up with a range of options that we thought were feasible and that we thought it would be appropriate to put costs to them to better understand the overall worth of the project, cost of the project, I should say.

Q In any of Deposition Exhibit Nos. 3 through 9, have you, Malcolm Pirnie, rendered an opinion considering which option is preferable?

A Not which is preferable. I have rendered some opinions that certain in my mind are not preferable.

Q But you have not rendered any opinion as to

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those which are preferable?

A No. Our task was to look at it from an environmental engineering point of view and I think there are many more elements to this project than just environmental engineering.

Q What are they?

A I would say that the public health and detailed information on the toxic effects, whether they were chronic or acute; detailed information on the socio-economic impacts to users of the Harbor.

We did some of that, but I think there is some additional information which was really beyond what we could do.

Q Let me back up a second.

With respect to the public health, is there anyone at Malcolm Pirnie who did any further work on the element of public health in Waukegan Harbor?

A Peripherally, yes. We are trying to look at that aspect insofar as it affects the environmental engineering that we are doing, but we are not doing tests or anything of that nature.

Q Do you believe as you sit here today that the public health is involved in Waukegan Harbor?

A I have no opinion on that.

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Q Does Mr. Henningson?

A I am not sure.

Q When you met with Mr. Hynes and Mr. White, were there any representations made concerning if there was a project whether your firm would oversee that project?

A None whatsoever.

Q You view your role simply as one giving an opinion and evaluating it and probably walking away from it?

A That's right.

Q With no ultimate responsibility for seeing it through if in fact that was the project?

A That is not within the scope of general things that we outlined and we have not considered that as a prospect at this point.

Q You didn't view your recommendations in the light that you might yourself have to supervise the ultimate construction of the project?

A We always view our recommendations in that light, whether we actually get to do the construction design or not.

Q But at least in this case, there was no promise made beforehand that if the project goes through,

you would be the engineer to oversee it?

A That is correct.

Q As you sit there now, you have had no promises to that effect?

A That is correct.

Q Is your firm capable of overseeing a project if there was one in this case?

A We believe so.

Q You wouldn't have any prejudice against doing so?

A No.

Q Besides yourself and Mr. Henningson and I see some other names on Exhibits 3 through 9, other than the names that are on those exhibits, are there any other personnel at Malcolm Pirnie that are involved in this study for the U.S. Attorney?

A There have been other people working on this project.

Q Other than the persons named in that memo?

A That is correct.

Q What are their names? I am talking about the professional people.

A Professional people, let me look at the names: Timothy Ratvasky, R-a-t-v-a-s-k-y; Mark Millsbaugh,

M-i-l-l-s-p-a-u-g-h; Calvin Brunner, B-r-u-n-n-e-r;

Henry LaBarba, L-a B-a-r-b-a; Thomas Aulita, A-u-l-i-t-a;

Robert Raczko, R-a-c-z-k-o.

I believe there are a few others, but I can't -- I don't believe their input was of major significance.

Q In addition to the people that are mentioned in the memorandum?

A Yes.

Q When you were here for the two hours in June, was there any discussion as to how the work would be broken down, who would do what?

A I am not sure if we did it in June or not in that meeting.

Q At some point you did it?

A Yes. I am not sure that we did it in the presence of Mr. White and Mr. Hynes. Mr. Henningson and I discussed how we would break the work down.

Q Did you tell Mr. Hynes or Mr. White, either you or Mr. Henningson would testify in this case?

A Yes, we indicated we both would be willing to testify.

Q At that point, of course, you didn't know what you would testify to?

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meeting other than what you have told us?

A We looked, we asked for an aerial view, aerial photo of the Harbor, and they provided it and they pointed out where Slip 3 was and where the Harbor was.

Q What did they say about Slip 3?

A That it was there.

Q And why was that significant?

A Well, they indicated the whole Harbor and indicated it was reported there was PCBs in the whole Harbor.

There was an OMC discharge at one time into that slip.

Q They told you that?

A I believe it was mentioned, but it also, I believe, was in the synopsis, so we were really going over things we had a feel for, a vague feeling.

Q Anything else?

A I don't believe so, nothing significant.

Q Did you travel to Waukegan that day?

A That is correct.

Q Did you have an opportunity to see the Harbor?

A Yes.

Q How long were you at Waukegan Harbor?

A Approximately an hour to hour and a half.

Q Was that your only visit to Waukegan Harbor?

A Yes.

Q After having been at Waukegan Harbor, had you reached any conclusions?

MR. HYNES: You mean any conclusions on remedy or any conclusions at all?

MR. PHELAN: Any conclusions on remedy. I am not interested in the esthetics of it.

BY THE WITNESS:

A No, I don't believe so.

BY MR. PHELAN:

Q Did you make any conclusions about the remedy after you saw the Harbor?

A No, I didn't.

Q How about Mr. Henningson?

A I can't speak for him on that particular issue.

Q Did you look at Slip 3?

A Yes.

Q Did you look at the discharge, the area of discharge?

A From --

Q You say you had a synopsis and you say there

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was a discharge in Slip 3. Did you look in particular where the area of discharge was?

A Where it had been, yes.

Q You did?

A Yes.

Q Did you look at any other areas other than the Harbor?

A We went out to the property of the treatment plant which is adjacent.

Q And?

A Stayed for a minute and left.

Q Did you actually view the North Ditch as it has been described?

A Part of it, but certainly not in its entirety during that trip.

Q Did you look at either the west or the east end of North Ditch?

A I think we got a glimpse of the west, part of the west. I am not exactly sure, but we did not see that much of the North Ditch. We relied mainly on the aeriels.

Q After that visit to Chicago and Waukegan in June of '82 --

A Or thereabouts.

Q Or thereabouts, have you since had any other conversations with Mr. White or Mr. Hynes or anyone else with the U.S. EPA other than those you have had immediately prior to the deposition?

A I'm sorry. I don't understand the question.

Q You had conversations with them immediately prior to this deposition?

A That is correct.

Q Between that initial visit and these conferences you had immediately prior to this deposition, have you had any other conferences with them?

A Yes, we had one other meeting, two other meetings, I believe.

Q Did you discuss at those two other meetings your recommendations?

A We discussed at those meetings what our findings were to that date in the first meeting.

Q When was the first meeting? Actually this would be the second meeting, right?

A Yes, that would be the second meeting.

Q Can you give me a date on the second meeting?

A I would say -- I have to back up.

I think we started in May, so that the first meeting was either in late May or early June.

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The second meeting was either in late June or early July.

Q Where did that meeting take place?

A That meeting was here in this building.

Q Who was present at that meeting?

A Mr. White, Mr. Hynes and Ms. Stein, and I believe there were several people from EPA.

Q At that meeting had you reached any preliminary conclusions?

A We presented our findings to date. One conclusion we had, I guess reached, was there was a possibility of siltation in Slip 3 and we were going in to investigate that.

We had reviewed most of the existing information by that time. I had reached a conclusion that there were almost certainly hundreds of thousands of pounds of PCBs in the area.

Q Go ahead.

A And we had presented, we had developed some preliminary thoughts on the kinds of actions which appeared appropriate to us and indicated that we were investigating those and would continue to investigate them.

Q Did you present anything in writing?

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A No. Well, I guess I might have had a draft of one of the memos, an earlier version which I believe I took back. I am not sure what happened to it. It was incomplete.

Q How many hours or minutes did these meetings take?

A That second meeting, I think took three to three and a half hours.

Q Have you given us the recommendations and the findings that you made at that second meeting sometime in late June or early July?

A You mean the two relative to siltation? I have given you something relative to siltation.

Q And some preliminary kind of options?

A Yes.

Q First, what do you mean when you use the term siltation?

A What I am referring to is the accumulation of solids in the Slip 3 area from the local watershed which drains into Slip 3.

Q Accumulation of solids in Slip 3 which drain into the slip from the local watershed?

A That is correct.

Q Of what significance is that, in your opinion?

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A In our opinion, in my opinion, the land area immediately adjacent to Slip 3 is during periods of runoff, rainfall is delivering solids, suspended solids which then settle from unpaved and paved areas and it is my opinion that those materials are then settling in the Slip 3 area. And if allowed to proceed long enough, they will become a significant impediment to navigation in that slip.

Q Do you know how long it has been since the last time Slip No. 3 was dredged?

A I believe it's been a decade, half a decade.

Q What is your belief based on?

A It is based on some work -- I am sorry, let me rephrase that.

It has not been dredged in the last -- Slip 3 only would be about a decade and that is based upon some discussions that we had with one of the Larsen brothers when we visited the Waukegan Harbor area.

And I believe there is also some information, mainly based on that. That is all I recollect.

Q Did you tell Mr. Hynes and Mr. White at that second meeting that you had all the information you needed?

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A No. I believe we had requested some additional information.

Q What did you request?

A I would have to refresh my memory. The bibliography is set up on how we received documents and through at least the first two-thirds of it, it is time-oriented.

I believe we did request the additional information at that meeting and probably, I believe, had requested it a week or two after that.

Q Had you determined at that time you didn't need any testing of your own?

A Yes.

Q Or any more photographs?

A We believed that we had enough information to formulate a range of feasible options.

Q Are any of the Exhibits 3 through 9 parts of or the complete draft memo that you showed Mr. Hynes or Mr. White in late June, early July?

A I can't recall.

Q What were the preliminary kinds of action that you reported to them that you were going to opine about?

A We indicated that we were going to look at

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no-action. We indicated that we were going to look at dredging and/or removing material which represented the significant fraction of PCBs.

We indicated that we were going to look at our containment cells or landfills, if you will, in the Harbor area and also off site or out of the Harbor area; that we were going to look at the possible use of Slip 3 as a containment area.

We were going to look at the stabilization of the North Ditch, Crescent Ditch complex without any removal.

Q The Crescent part is which side, the west or the east?

A Perhaps we could just say the non-Harbor area and all the upland. We use the North Ditch as a euphemism for the entire complex, the entire range.

Q I like Upland.

A And also incineration.

Q Did Mr. White or Mr. Hynes express any opinions for any one of these?

A No.

Q The draft memo that you mentioned, do you know what the subject matter of that was?

A I believe it was sort of an earlier version

as I reflect on it. I am not positive -- I think it was an earlier version of this one, Exhibit No. 9.

Q That is volatilization?

A No. I believe the earlier version of this which outlined the kind of options we were looking at, that did not have the Paragraph 2 where we began to reach a conclusion.

Q What else can you recall was discussed at that meeting?

A There certainly should have been a lot of things. Let's see.

MR. PHELAN: Maybe this is a good time to break for lunch.

(At 12:15 o'clock p.m., a
lunch recess was taken to
1:00 o'clock p.m.)

IN THE UNITED STATES DISTRICT COURT
FOR THE NORTHERN DISTRICT OF ILLINOIS
EASTERN DIVISION

THE UNITED STATES OF AMERICA,)	
)	
Plaintiff,)	
)	
vs.)	No. 78 C 1004
)	
OUTBOARD MARINE CORPORATION)	
and MONSANTO COMPANY,)	
)	
Defendants.)	

August 10, 1982,

1:00 o'clock p.m.

The deposition of RICHARD P. BROWNELL
resumed pursuant to noon recess at 219 South Dearborn
Street, Room 1486, Chicago, Illinois 60604, before
Thea L. Urban.

PRESENT:

MR. JAMES T. HYNES,
MR. JERROLD H. FRUMM,
MR. RICHARD J. PHELAN,
MS. ROSEANN OLIVER,
MR. RICHARD J. KISSEL,
MR. JEFFREY C. FORT,
MR. JAMES H. SCHINK.

ALSO PRESENT:

MR. JOHN VAN VRANKEN,
MS. BARBARA CHASNOFF.

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RICHARD P. BROWNELL,

called as a witness herein, having been previously duly sworn, was examined and testified further as follows:

DIRECT EXAMINATION (Resumed)

BY MR. PHELAN:

Q Now that you have had an hour to think about it, Mr. Brownell, tell us what else was discussed.

A As I indicated before, we came out and talked about several options that we thought made sense pursuing, and we also had some very rough preliminary order of magnitude costs with those options at that time, when it came out.

We discussed these rough costs and we also discussed how much it might cost to remove a pound of PCB from the area and contain it and we found that roughly the costs we were talking about were very, very low, 10 pounds and less to contain the bulk of the PCBs that appeared to be there.

We also talked a little bit about the general concepts on the movement of PCBs such as moving by groundwater and moving out from the Harbor and moving it through the North Ditch and through volatilization also, but had reached no real conclusions at that time other than that all of the options we were talking

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about would generally improve the situation for the net movement of PCBs out of the area and that took up three or three and a half hours.

Q Were there any notes that you made at this meeting?

A No.

Q As a result of that meeting, what if anything did you decide to do?

A We continued as a result of that meeting to complete evaluation, did more detailed work on the options that we had laid out. We had also, let me back up.

We had also indicated we would look at incineration, but I didn't have any work completed at all on incineration at that time.

So we looked at those options in more detail between the second and the third meeting.

Q To the extent that you reported at your second meeting in the end of June, early July, what influence or what effect did the amount of PCBs have on the number of remedies that you can look at?

A I don't think it had any effect on the number of remedies.

Q Do I understand from what you have already

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said that you are not prepared to prefer one remedy over another, merely to say these are remedies and this is what they would cost?

A I have been viewing this entire situation primarily from an environmental engineering point of view, recognizing full well there are public health aspects that we generally look at and some socio-economics that we generally look at, but not in any infinite detail.

For example, I am not an expert on the value of a marina or the value of boat traffic in and out of the Harbor.

So we tried to evaluate everything within this kind of context and the goal we had was to develop a series of options which were feasible from an engineering, environmental engineering point of view and would accomplish a benefit and would improve, let us say, the release of PCBs, mollify it and remediate it and also would go a long way towards preventing, let us say, the sudden loss of PCBs if we had an unusual man-made or natural event.

So within that context, we developed a range of feasible options that we thought accomplished varying amounts of things and had varying amounts of

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risks associated with them and improved the risks to a varying degree.

It is hard for me to say that given the context of what I am working in, it is hard for me to say that one is the best because I think it has to be viewed in a broader context.

Q Let us just for the purposes of a short preliminary analysis now suggest to you that hypothetically there were only 10,000 pounds of PCBs in Waukegan Harbor.

A Yes.

Q Would that in any way cause you to prefer one option over the other?

A Well, that is a hard question because I feel there are more --

Q I know. I am saying simply hypothetically, assume there are only 10,000 pounds.

A It is not really a realistic analogy here, in my opinion.

Q I am asking you, can you do that? Can you assume for me that there are only 10,000 pounds of PCBs in the Harbor.

Would that affect whether you would prefer one or more of the remedies that you have analyzed?

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A As long as it is understood that I don't consider that to be a realistic analogy in this particular situation.

Q It is not an analogy, just a hypothetical.

A Okay. Then it would probably change the range of options that I looked at. It certainly would affect the costs.

There are a lot of other things that I would have to know in this case. Are they spread out over the entire area? We have to define Ground 1.

Q Make two assumptions: One, there are 10,000 pounds of PCBs or approximately that amount and that most, the majority of them are in Slip No. 3.

A Okay.

Q To what extent if any would that change the number of options you have analyzed as available?

A If they were only in Slip 3, I would not have to focus on remediating the North Ditch and worrying about that. That would be one improvement I could make on the amount of work that I would have to do, improvement being it would be less work, but that is one thing.

Beyond that, I am not sure that it would change the things I looked at at that point.

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I still would be looking at incineration. I would still look at containment, at removal.

Q Would it make the no-action any more or less likely?

A A lot would depend on how it was distributed in Slip 3 and where exactly it was.

(Mr. Richard Kissel entered
the deposition room.)

BY MR. PHELAN:

Q After you had your meeting at the end of June, early July, you say you had another meeting.

A Yes.

Q When was that meeting?

A That meeting was in mid-July, approximately the 15th of July.

Q What was the content of that meeting?

A At that time we discussed with the U.S. Attorney people in more detail where our costs were shaping up, what our thoughts were on the impact on the fish in the Harbor, near-shore area and open Lake; what we felt the siltation was shaping up to be; that is my definition of siltation from the immediately adjacent drainage area to Slip 3, and what our options consisted of.

(Ms. Roseann Oliver entered
the deposition room.)

(Answer read.)

BY MR. PHELAN:

Q At that point, what cost estimates had you reached that you communicated to the U.S. Attorney's Office on July 5?

A Well, we had some rough preliminary costs at that time. We indicated there would be a cost associated with no-action, but that was one we had not really gotten any hard numbers on or final numbers on yet, but the other options --

Q Can I interrupt you?

What costs would there be associated with no-action?

A Well, if there is no-action taken, we feel there still should be serious monitoring that takes place to make sure that the PCBs do not start to move in a fashion different than what everybody is predicting that they will move and -- that really describes it, whether it be by air, by groundwater, by surface water, by whatever technique that might conceivably move away from the site and impact the environment in some fashion.

Q What are the other options that you had cost

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figures for, preliminary cost figures?

A We had some preliminary cost estimates for stabilizing the North Ditch area.

Q Incidentally, during your investigation of this matter for the U.S. Attorney, did you ever reach any conclusions as to the amount of PCBs in the North Ditch?

A Yes. I made some rough calculations just to satisfy myself as to where we might be.

I had one of my staff members look at the data and plot it up and between he and I we made some calculations and my rough idea, there are about some 400,000 pounds.

Q What sample or samples did you use as a basis for your calculations as to the amount of PCBs in the North Ditch?

A We tried to use all the data that was provided to us which was described in the bibliography.

Q Was there any grid done on the North Ditch?

A We did one, roughly. We tried to plot the data and see where it shaped up.

Q Was there adequate samples to do the grid?

A For the purposes of what I was doing, yes. I was trying to get a rough number and see where we were.

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Q In the material you used, were there any suggestions that this material may be distributed differently than other PCBs that you have been involved with before?

A In a general way, no. Specifically everything is different. In a specific application, one varies from another. When I say generally no, the PCBs if they are discharged will attach themselves to soil particles so you would expect to find them near soil.

If there are heavy discharges of PCBs, then you might expect because it has a specific gravity greater than water that it would sink because of the lighter material.

We understand that there was some dredging activity in Slip 3 in the past and that perhaps some of that material there was deposited in the parking lot area, which I consider to be part of the North Ditch. So from what I understand, I am not surprised to see PCBs in the fashion that they have been laid out and the information that we had seemed to me to be quite reasonable to allow me to put together the options that we developed.

Q What was the cost that you had estimated for stabilizing the North Ditch preliminarily at that

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meeting?

A I don't recollect the exact number, what the exact number was, but it was in the 800 to \$900,000 range.

Q What other options did you discuss then?

A We discussed using Slip 3 as a disposal area. We discussed many things that could go in there.

There is an accumulation of silt in the upper Harbor against the bulkheads owned by Larsen which is not considered to be part of Slip 3.

And we feel in accordance with the memo that we prepared on siltation that about 500 cubic yards or so should be taken out of there and disposed of and then we considered that, we discussed the possibility of bringing in material from the North Ditch that was potentially quite heavily laden with PCBs. And we also considered moving in material from the rest of the upper Harbor area portion thereof and to the Slip 3 area. There is material that is between Slip 3 and Slip 1 which has PCB concentrations which are well above 50 ppm and generally in the hundred to 150 ppm range.

We considered a range of ideas. We discussed a range of ideas as to what potentially could

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go into that slip and how we might dredge some and how we might dispose of some or dig it out of the North Ditch.

However, if we just wanted to stabilize the North Ditch and not move anything, we would probably have clean sand, relatively clean sand available for building a new slip for Larsen to replace the wall length or dock length that he would be losing if we filled in Slip 3.

Q Did you have a cost for using Slip 3 as a depository at that point?

A We had some rough numbers for in the roughly \$4 million range, three to four million dollars.

Q Incidentally, these are just your estimates as to what somebody might do it for, what some contractor might do it for?

A That is correct.

Q You had not actually contacted anybody at this point and asked them whether they would do this kind of work for that kind of money?

A We've talked to some people, not on the cost, but talked to some people in the dredging businesses, whether conceptually we were talking about representative problems. And they had the same problems, but we didn't

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talk about cost to do it.

Q To your knowledge, has anyone ever attempted to do with PCBs what you opined as the remedies available here?

A Yes, similar things, yes.

Q Where?

A In the PCBs that have fallen into water bodies that have been removed, been removed from Duwamish River and in the Upper Hudson and they have been dredged out. PCBs that have been in contaminated soils that have not saturated have been dug up and placed in secure landfills or other containment areas.

Q Areas where?

A I believe they started a project in North Carolina and moved the PCB-laden materials alongside the road. To my understanding, that's going to Mobile, Alabama.

Q Let me go back to the Hudson. Did they dredge the Hudson for navigational purposes or to secure the PCBs?

A There were two purposes. The first was to improve the navigation, but it was recognized there were PCBs in the material they were trying to remove and then there were some selected bank deposits which

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were also considered to be more risky to leave in place, so they were removed at the tail ending part of that project.

Q The actual solution, let us call it, to the Upper Hudson, none of the dredging or any of the dredging anticipated by that solution has been done?

A Well, the dredging that was done for the maintenance purposes was performed. It was anticipated that would result in the removal of PCBs, so I guess I disagree with you.

Q Did anyone monitor those dredgings to determine whether in fact PCBs were removed?

A Yes.

Q And they were?

A PCBs were removed, yes.

Q Those cost estimates in the Upper Hudson, did they meet or exceed the estimates that were made or were any estimates made?

MR. HYNES: Estimates in what regard?

MR. PHELAN: Cost of removal.

BY THE WITNESS:

A I believe there were some rough costs made. There were costs that were made for the construction of the containment area which was to receive all of this

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material.

In general, we found that for that project that we spent about \$50 a pound to remove the PCBs.

BY MR. PHELAN:

Q Was that including the ones on the bank?

A Yes.

Q Did that include transportation and storage?

A It included the storage. Let me check in here, in Exhibit 4, as to transportation.

Q Are you talking about Brownell Deposition Exhibit 4?

A Yes. Let me see if this can refresh me.

Yes, it included transportation.

Q What other options did you tell the U.S. Attorneys you had a cost figure on in your July 15 meeting?

A We had some numbers on complete -- let me back up.

We had developed some cost estimates as to what it would take to dredge the material out of Slip 3 and potentially dredge the material out of the Upper Harbor and then possibly we also talked about the possibility of removing material from the North

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Ditch area and then placing it in various containment cells.

Q Is that on-site or off-site?

A We had numbers on both on-site and off-site.

Q Did you at this time give them any preferences based upon the likelihood of risks of one remedy over another?

A Not really preferences, but we did discuss risks that were associated with any one option.

Q What is in your opinion the most risky remedy?

A Again, I am looking at everything from an environmental engineering point of view and the risks that we look at aren't necessarily all the risks and costs and everything that are associated with this kind of problem, so it is hard for me to give you the riskiest, but what I tried to do is --

Q Let me limit my question to the remedy that is the most risky from an environmental standpoint.

MR. HYNES: Environmental or environmental engineering?

MR. PHELAN: Environmental engineering.

BY THE WITNESS:

A I would say the no-action is the most risky.

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BY MR. PHELAN:

Q What is the next most risky?

A After that, it gets much more difficult.

I think incineration might be the next most risky.

Q Is that on-site or off-site?

A Either way.

Q It makes no difference?

A Well, it does make a difference. Off-site would be more risky than on-site.

Q What is next?

A Then after that, the options all provide in my opinion an improvement to the situation, so I wouldn't classify them as risky in the same grouping.

Q Since you won't classify them that way, in your opinion from an environmental engineering standpoint, what is the most efficacious option that you have looked at, if you would list them in the order in which they are most efficacious?

A If you will bear with me, I will get to at least a partial answer.

When we look at it from an environmental engineering point of view, we are considering the rough estimate or value judgment, if you will, of what improvements we are going to make on the long-term

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emissions and what improvements we are going to make relative to the possibility of a sudden man-made or sudden discharge of these facilities that are not presently secure.

The remaining options that I have outlined before all fill those parameters. To help us we also looked at the costs so that we could get an idea as to whether we are spending a lot of money per pound of PCBs contained or a lot of money for every pound of PCBs per year that we think we might mitigate the movement of.

In that vein, there are several that I feel are quite good. They are all good. I guess I would have a slight preference with all that in mind for using Slip 3 as a containment area.

Q What would be the next most efficacious?

A Well, with slightly, Slip 3; then we would most definitely stabilize Slip 3. That would be with it and selectively remove some materials from there.

It is a very slight preference and before someone can really make an overall judgment beyond my scope and capabilities, I think you have to factor in more detailed analysis of socio-economic factors, public health.

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Q Let me digress for a minute. How many years have you been working with the "PCB problem"?

A Off and on I've had involvement of a varying nature for, say, four years.

Q The four years that you have been studying the problem and working with the problem, would you say that the risk of PCBs to the public health and the environment have gone up or down based on more scientific investigation?

A Well, I think we have always had a feeling there is a chronic health problem associated with PCBs and I don't know that our feelings on public health changed that much.

John Henningson can talk more to that as an environmental scientist that has looked at that as an aspect of the project.

I feel there is a public health problem associated with PCBs and there are a whole wide array of organic chemicals.

Q My question is in the last four years that you have been working with it, do you think the potential problem associated with PCBs, be it an environmental problem or a public health problem, has gone up or down?

A I think it has done both. I think there is

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some information that I have read in the literature which suggests that the chronic problems are the ones that should be focused on. Some of the other problems, the acute problems, should not be emphasized.

But in the course of all my work as an environmental engineer on all these projects, I would be remiss if I did not consider that problem in a broader context as developed by experts in that field. I believe that expert information has been distilled in the passage of legislation by Congress or other bodies and development of regulations relative to the safe handling of chemicals, including PCBs.

Q You mentioned Congress. Do you know whether Congress has in fact found that PCBs are a toxic substance and should be --

A I know that Congress has passed legislation after hearings.

Q Did they make a finding of toxicity?

A I am not adept enough at the words you are using.

Q Did they make a finding?

A I have not read the legislation, so I cannot tell you whether they have or not.

Q My question is whether you felt the risks you

seem to feel are associated with PCBs have increased or decreased in the last four years and in your answer is they have gone up in some areas and gone down in others.

A They have gone down as I have described, but not so much relative to what we knew two years ago. I don't believe in the last two years, our opinions have changed much, if at all, relative to the hazards of PCBs, but I believe as we find many more sites of PCBs that have been disposed in the past and they are coming to light and as a result the hazards are going up because there are more PCBs in the environment where I don't believe they should be.

Q Do you know of any increase in the amount of PCBs in the aquatic life of Hudson in the last, say, four years?

A John Henningson should address that.

Q Do you know what in fact the number of PCBs found in aquatic life has been in the Hudson in the last four years?

A I believe one year it went down, but that's not firsthand information.

Q You mentioned as the most efficacious, the Slip 3 containment area with some stabilization in the

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North Ditch.

A I indicated I had a very slight preference.

Q I am sorry, that was your preferred slightly efficacious remedy.

What would be the second?

A The rest are pretty much the same. You have a wide array. There are some that require less action, but we leave more PCBs in a place that can potentially move more readily, so there is potential and more risk.

There are others where we have taken a greater action to remove and reduce the risk and hazard, but the effort has to be to assess how far we have to truck the material off site, what the risk is, how secure that containment site would be, so I would say the rest of them are pretty much the same, in my mind when I balance all the factors that I feel are appropriate for me to balance.

Q When you spoke to the U.S. Attorneys on July 15, and you gave them these estimates and these opinions and these remedies, did they express a preference for any one of them?

A No, they said, "When are you going to be finished?"

Q The hypothetical I gave you earlier that there

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are 10,000 pounds of PCB in the Harbor with most of them in Slip No. 3: Assume for the moment one other factor and that is you rerouted the dredging into Slip No. 3.

Would you have or do you have an opinion as to whether that would still make most risky the no-action remedy?

A Yes, because I believe the historical information on lake levels indicates that we can expect a low-lake level to occur within the next decade or two, to a point where dredging would be required and even if the levels don't change, the silt levels don't change.

Q If you had dredging and you had 10,000 pounds of PCBs in there, that would still in your opinion justify some action, even if you went in and dredged it out later and maybe even spread those 10,000 pounds of PCBs around?

A As I indicated before, I consider the hypothetical to be unrealistic and once we are talking about ball park, I believe I also said that I need more definition as to what was the configuration of PCBs in the slip.

But I did say, I believe, that assuming it wasn't a bad configuration --

Q It wasn't what?

A Wasn't a bad configuration. Let us say it

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was easy to dissolve backup in the water column and therefore be pushed out in the same fashion as it is now, I would still want to look at the array of answers.

Q Do you know whether the distribution of PCBs that have actually been sampled indicates an unusual and unique distribution within Slip No. 3?

A I am not surprised at the distribution of PCBs in there.

Q No, my question is based on the tests, not done by you, but the tests that you have obviously reviewed.

Isn't it true that based on those tests, there is a unique and unusual distribution in Slip No. 3?

MR. HYNES: What do you mean by unique and unusual?

THE WITNESS: I don't understand.

MR. HYNES: In comparison to what?

MR. PHELAN: I am using your terms.

THE WITNESS: No, I would not put the two together at all.

BY MR. PHELAN:

Q My question is do you have an opinion and the opinion is based on the evidence that you say that

is not an unusual or unique distribution?

A I don't think it is that unusual a distribution. Every distribution is unique.

Q Was there any data on the North Ditch that you thought served as a reasonable basis for projecting the amount of PCBs that was in the North Ditch?

A The data that is referenced in here, I thought was reasonable to allow me to develop a rough estimate as to how many thousands of pounds potentially were there and then discuss development and evaluate what options should be looked at.

Q Were these the kinds of questions that Mr. Hynes and Mr. White asked you when you conferred on July 15?

A No, they didn't ask me whether it was unique or unusual. They certainly discussed the options.

Q Did you give them any draft report at this time?

A I may have given them a copy of Exhibit 4, Brownell Exhibit 4. It may have been an earlier version.

No, it would have been finished then.
How about that.

A copy of Exhibit 6, I believe I gave them some notes relative or another copy perhaps of

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Exhibit No. 7. I am not sure whether I gave it to them then or mailed it just before I came.

Q Can I see Exhibit 4?

A Yes, this one, this one, this one is beginning to fall apart. (Indicating.)

Q Is this document, Brownell Deposition Exhibit No. 7, the same material that you gave them on July 15?

A Pretty much.

Q Has there been some changes made in it?

A Yes. There are some additions that have been made.

Q There's nothing that has been changed, just additions?

A Yes. I included the references in a clearer fashion and added one or two numbers.

Q This purports to be prepared by Mr. Shahabian.

A Yes, Dr. Shahabian prepared it and after he prepared it, I discussed the things I thought were missing and he added it.

Q What were the things that were missing that was not in the report when you discussed it on July 15 with the U.S. Attorneys?

A I believe that on figures -- there were some changes -- on Figures 1, 2, 4 and 5, the word layer was

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spelled l-a-y-e-l and I had that corrected.

I believe I suggested to Dr. Shahabian that he include the surface area of Slip 3 in Item 5, just so I could remember what it was, and also to indicate the document that he had used when he made some of the calculations here relative to the silt which I believe is Overton and Meadows, "Stormwater Modeling."

Q Otherwise it was the same draft?

A Yes, basically. I might have caught another typo or two.

Q Earlier this morning we discussed when the Slip 3 was last dredged. I note here in Deposition Exhibit No. 7 that you say no dredging has taken place since '77. Does that include Slip 3?

A To the best of my knowledge, no dredging has occurred in the entire Harbor since 1977.

Q Including Slip 3?

A To the best of my knowledge, but I can't attest to whether somebody slipped in there and dredged a little. I can't positively say without doubt.

Q The other one is Deposition Exhibit No. 4. This is from Judith A. Bedard to Mr. Henningson.

Was this discussed with the U.S. Attorneys

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on July 15?

A No.

Q You simply gave it to them?

A Yes.

Q Is Deposition Exhibit No. 4 public information?

A Almost all of it is. I believe all of it is, virtually everything in there is, can be found someplace else.

There are some original words and in trying to edit it and synopsize it into a more brief fashion and there may even have been a calculation or two relative to the cost of the per pound of PCB contained or stopped that may not be in any other documents.

Q To your knowledge, has there now been a local board appointed by the New York Environmental Protection Agency that has decided not to do anything about the Upper Hudson and hot spot property?

MR. HYNES: Upper Hudson?

BY THE WITNESS:

A What do you mean by local board?

BY MR. PHELAN:

Q Local board appointed by the U.S. EPA to work

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out the "solution" to the problem?

A To my knowledge, no board convened by the State of New York Department of Environmental Conservation has decided not to proceed with the project.

Quite the contrary, they recently offered their opinion -- let me back up.

Recently the New York State Hazardous Waste Siting Board offered an opinion. The majority opinion was that this project should proceed.

Q There was a minority opinion that it shouldn't?

A Yes.

Q I guess that is what I was referring to.

Have you read the dissent filed by the engineers in that case?

A No.

Q That isn't a part of Deposition Exhibit No. 4?

A I believe all, well, Deposition Exhibit 4 is which one, this one?

Q The Upper Hudson.

A Let me refresh myself and see.

I am not sure because I've never read the other material. I can't say if it is incorporated or not incorporated.

Q This Exhibit 4 was not discussed at your July

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15 meeting?

A No, because John Henningson and I only had it made so that we would have a synopsis of three cartons of information, that reports and the like, I believe we have turned over to you on the Upper Hudson, and we thought anybody else that would try to read that would enjoy the synopsis.

Q The other one that you discussed was No. 6?

A This is another page, No. 4F.

Q No. 6 was discussed, Brownell Exhibit No. 6?

A Yes, I believe it was. I believe Mr. Henningson discussed that, at least in part, the concepts in there.

Q Rosalind Mason Harris?

Let me show this to you.

Having given this to the U.S. Attorneys and having had some discussion with them on July 15, what conclusion if any did you or they draw concerning the present increase or decrease in PCB concentrations in fish?

MR. HYNES: I object to the conclusions that they drew.

BY MR. PHELAN:

Q Did you and they draw any conclusions?

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A I don't believe they drew any conclusions.

Q Did you?

A Mr. Henningson is the one that really should address this in detail.

Q Do I assume that you drew no conclusions then?

A Just personal opinions that there still were PCBs in the fish and that in some species the data were variable from year to year. Deep water fish seemed to show somewhat more of a trend down, but the near-shore species and Harbor species had no trends down that we could discern or I could discern.

Q Do you know whether or not the information contained in Deposition Exhibit No. 6 was consistent with the fish levels you found in the Upper Hudson?

A I do not know that.

Q Mr. Henningson would know that?

A Yes, he will, I hope. He better. I would have one other thought about the value of the fisheries off the breakwater and in the Harbor area had a modest value at best. And the commercial fisheries had a significant value, but most of that was gained from reading this which as you can see was prepared for both of us. But it's backup information that Mr. Henningson had really wanted done.

Q Was there anything else discussed at your July 15 meeting?

A We discussed costs on off-site disposal, that it might be \$15 million, \$20 million, in that range if we took all the material off site, trying to remove all the material that had a PCB concentration greater than 50 ppm.

Q That is from the North Ditch and the Harbor?

A Yes.

Q Any other areas?

A Well, the North Ditch being the entire Upland area and we also had some options where we tried to contain all that material in the Harbor area.

Q Any other discussions that you recall on that data?

A I believe there were some discussions on groundwater movement and we indicated that with our rough thoughts, our preliminary thoughts, I should say, relative to containing the material in Slip 3 was that we should see very little movement of any material put in there, leaving the Slip 3 area once it were properly contained via the groundwater.

Q Between July 15 and today, you had another meeting with the U.S. Attorneys other than in preparation

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for your deposition?

A Other than in preparation for the deposition, no.

Q Did you prepare these other exhibits: 3, 5 and 8 in the interim?

A They were finished but we were working on all of these for quite some time.

Q When did you arrive for your deposition --

A Yesterday.

Q -- here in Chicago?

A I caught a 7:45 out of LaGuardia and got here in the office 10:40 your time.

Q You spent the day discussing the matter with Mr. Hynes?

A We talked about settlement of a SBA case, too. It wasn't solely on this, but it was mainly on this.

Q You are being facetious, of course.

A I am being facetious. I can't keep my sense of humor from --

Q What materials did you go over with with Mr. Hynes yesterday?

MR. HYNES: Excuse me?

MR. PHELAN: What materials did he go over with you yesterday.

BY THE WITNESS:

A Are you saying what documents were reviewed?

BY MR. PHELAN:

Q Materials, anything, photographs, layouts, specs, notes, chalkboards, videotapes.

A None of the above other than these reports.

Q Just those that have been marked as exhibits?

A Yes. I believe I referred to one or two of the documents that are in the bibliography as well.

Q What are --

A It wasn't in the course of discussion, but while they were out of the room, I did look at the draft environmental impact statement we had done for the Upper Hudson for ten minutes.

Q Any others?

A There was another Hudson report that I had with me, but I didn't look at it.

Q Just curious, Mr. Brownell, how much has the United States EPA paid Malcolm Pirnie for its work on the Upper Hudson?

A How much have we been paid?

MR. HYNES: By the U.S. EPA?

MR. PHELAN: Yes.

BY THE WITNESS:

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A Zero, to the best of my knowledge.

BY MR. PHELAN:

Q How about the New York EPA?

A New York Department of Environmental Conservation?

Q Yes.

A I am not sure of the exact number. Some of the work we had was subcontracted to other people.

I believe it is well over a million dollars. That's how much we have accrued.

Q You haven't been paid that yet?

A I don't think we have been paid all of it yet:

MR. PHELAN: Why don't we take a break.

(Brief recess.)

BY MR. PHELAN:

Q Can you tell us some of the highlights of the documents that you went over yesterday and we will get into those?

MR. HYNES: You want to take them in order, 3 through 9?

BY MR. PHELAN:

Q What were the documents that you spent most of your time with?

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A These?

Q Of those, which are the ones you spent most of your time with?

A Exhibit 3.

Q As I understand it, you visited Chicago on three occasions and Waukegan Harbor on one occasion in preparation for the opinions that you are about to give in the reports that have now been marked and identified in this deposition.

A Basically that is correct, but actually I only visited Chicago twice. The third meeting was held in our offices in White Plains.

Q Is that July 15th?

A Yes.

Q How many hours did Malcolm Pirnie spend up to the time of the deposition this morning on this project for the U.S. Attorneys?

A I don't have an exact number, but I would estimate roughly 1250.

Q Of the 1250 hours, how many hours did you spend?

A About 120.

Q And that would be a comparable amount for Mr. Henningson?

A I believe so, slightly less.

Q Now, we have discussed Exhibit No. 1 already.
I have just a couple more questions about your back-ground.

What engineering studies have you done involving removal of contaminant from sediments and soils?

A I have been involved in studying how to treat PCBs in dredged spoil material in the Upper Hudson.

I have been involved in treatability work involved in the various options we talked about and pertaining to that material, and we presented design criteria as a result of those studies, design activity.

Could you read the question again?
I want to understand exactly what it is.

(Question read.)

BY THE WITNESS:

A (Continuing.) I have been involved in the removal, development of remediation plan for several industries that had organic chemicals or other chemicals spilled on the ground; hence, commingled in the soil. Some of the soil was saturated, one facility in New Jersey, one in Vermont.

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Also, as I indicated before, I reviewed work that was done with PCB contamination in the Buffalo area.

I have also looked at remediation measures with a site in Massachusetts, a site in Connecticut, two, three, four sites in Connecticut, sorry. They went to various stages of my activity.

Sometimes we laid out my ideas and the client was able to implement them. Sometimes we went and developed design criteria and sometimes there were detailed designs made, but several of the completed projects were to remove materials.

BY MR. PHELAN:

Q I think you and I discussed the number of projects that you actually began involving contaminated sediments. Would that be just the Upper Hudson?

A What do you mean?

Q Where your design project has been adopted and it's gone forward and been done.

A Where it's been completed?

Q Would that be dredging done in the Hudson for navigational purposes?

A No. We have made recommendations to remove contaminated soil at two other sites which are now

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complete.

Q What sites are those?

A That was a site in New Jersey and a site in Vermont -- I'm sorry, New Hampshire, right on the Vermont border.

Q What is the one in New Jersey?

A International Wire Products.

Q And in New Hampshire?

A Confidential client. I am not at liberty to discuss.

Q What was the contaminated sediment that was being removed?

A Where?

Q In New Hampshire.

A I am not at liberty to discuss that.

Q Did they involve PCBs?

A No.

Q Did any of those removals involve dredging?

A Those two did not involve dredging: One in New Jersey and one in New Hampshire.

Q How about your experience with on-site encapsulation of contaminated sediments such as one of the remedies that you have opined about here?

A Well, I have designed and am responsible for

the design of a foreclosure of fly ash landfill. One of the concerns was the leaching of heavy metal, but we tested and found fly ash did not leach heavy metals, still we had a cover that was designed and constructed.

I have been involved in phases, portions of the PCB work on the Upper Hudson.

I have also looked at landfilling of other types of wastes and laid out the concept and done preliminary engineering for landfills, made preliminary cost estimates for landfills for toluene di-isocyanate wastes, which at one time was a hazardous waste but I believe many people have taken efforts to have it delisted.

Q Does that complete your experience with on-site encapsulation of contaminated sediments?

A That last one wasn't sediments as much as it was chemical wastes.

We have also looked at encapsulation as one of the measures in the project we did in Massachusetts which was for a confidential client. I believe I described part of that before.

Q Did that involve PCBs?

A No, sir, mainly gypsum sludge.

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Q Apart from the Upper Hudson, have you had any experience with removal or containment of PCB-contaminated sediment?

A Well, no.

MR. HYNES: You are talking about sediments and non-soils, I assume?

MR. PHELAN: Sediments.

BY MR. PHELAN:

Q How would you define sediments?

A That is a good point. I would define sediment as something that a soil particle had fallen through water and was overlain by free-standing water or free-flowing water.

Q In terms of the chemistry of polychlorinated biphenyls, is that one of the areas you are familiar with?

A I would not consider myself an expert on chemistry.

Q How about its toxicity?

A I would not consider myself an expert on its toxicity.

Q Or its carcinogenicity?

A Or its carcinogenicity.

Q How about transportation of PCBs from the

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site to sediments or water?

A I believe I know a little something about that, yes, enough to -- I believe I know enough to properly evaluate the options that we have developed here.

Q How about the knowledge or expertise of PCBs that are buried in sediment of the Harbor and the Lake?

A I am sorry. I don't understand the question.

Q In the process by which PCBs become part of the sediment, both in the Waukegan Harbor and Lake Michigan, do you consider yourself an expert on that?

A I consider myself an expert on the ways that PCBs may be resting or absorbed or situated in sediments and soils, and water.

Q That would be true of the Waukegan Harbor and Lake Michigan?

A I believe the knowledge that I have would be applicable to Waukegan Harbor and the North Ditch area.

Q How about volatilization?

A I have an understanding of volatilization, but I believe that that is an area that does not have as much information available as the other areas do.

Q You don't think that has reached a point yet where it is a subsistence?

A I am not sure what you mean by a subsience.

Q That there is enough expertise to know, to be able to predict with a reasonable likelihood of what is going to occur.

A I believe there is enough information to do that.

Q How about aquatic biology?

A I am not an expert on aquatic biology.

Q When did you first become involved in the Upper Hudson River?

A As I indicated, I have been involved off and on for the last four years. In 1980 I was project officer for several of the aspects of it. At that time Mr. Henningson worked for me.

Q What was the scope of your project in the Upper Hudson?

A When you say your --

Q You.

A Personally, when I was project officer?

Q Yes, when you were project officer in the last two years.

A The main activity that was undertaken when I was project officer was the completion of the draft environmental impact statement, to the best of my

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recollection.

Q In '78 to '80, was there anything you did then?

A Yes, I worked on the treatability of the PCB sediments.

Q When did you expect the work to begin on that Upper Hudson project?

A I have no idea.

Q There are no dates set?

A It is my understanding that the major factor right now is the getting the money that EPA has released. I have no idea what the hold-ups are.

Q So there is no date at this point set in time to begin the project?

A There are dates set to begin the project, but I am just not aware of them.

Q With respect to that Upper Hudson project, can you give me some ideas of the problems you encountered in the treatability of the sediments. First, why don't we get to it on an engineering basis.

A There didn't seem to be many problems at all. We were able to show that by settling the material and the application of alum and polymer, that we could reduce the PCB materials in the dredged water to

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reasonably low levels and we were able to develop information that indicated that activated carbon probably would not be necessary, which we kind of started with the idea that it probably would be. And when we finished it, it didn't look necessary except for a short period of time, so settling seemed to accomplish a lot of what we were trying to accomplish.

Q Now, your plan is to dredge certain areas of the Upper Hudson and then deposit those in landfill sites nearby?

A In a landfill site.

Q In a --

A That is correct.

Q You would move the dredged material from the spot to the landfill by barge or by truck?

A It would not go by truck. I believe it would be piped. Most of it within reach, we are going to try to make the landfill as close to areas of work as possible and where necessary, I would assume we would use barges, but I am not exactly sure of that particular detail.

Q How many areas do you plan on dredging?

A I believe there are about 20, but if I may refer to this --

Q Yes.

A I can't find it here, but I believe 20.

It was in a relatively close area.

Q In terms of the dredging that you are going to do at the spots, how large by area are one of the so-called sites?

A That's a good question. I never really thought of it in exactly those terms.

MR. HYNES: In terms of area, you mean just area, one acre?

MR. PHELAN: A football field, half a football field, how big an area?

BY THE WITNESS:

A My recollection indicates that -- I would say somewhere around a tenth of an acre, half an acre, somewhere around that range. I'm sure there are some smaller and a few that are bigger.

BY MR. PHELAN:

Q These sites have all been identified?

A Yes.

Q That wasn't done by you?

A Some of -- I'm not sure who did the analysis that identified the sites.

Q I take it that was done by some grid analysis?

A I believe that most of it was, but there were certain areas where a grid analysis didn't seem to apply, so that these random samples and some work was done previous to our involvement which added some other data which didn't fit the grid, but we added it on to support the grid.

Q You are attempting to remove PCBs to what part per billion?

A To a relatively low level; in this case, I believe it is mostly below 50 ppm.

Q 50 parts per million?

A Yes.

Q Below that?

A That is about the main point -- hold on, I will take a look.

I can illuminate on some of the previous statements also. The range that we think we are going to be getting out is somewhere between 39 parts per million to 380 parts per million in the various areas. There are approximately 20 areas we are looking at.

However, the area ranges from one acre to 10 or 20 acres -- I'm sorry, half an acre to 10 or 20 acres depending on the size somewhat.

Q Who did the engineering work on the identification

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of the sites at Malcolm Pirnie?

A Indication of the sites, I'm not sure I recollect.

Q And the parts per million, who made the decision at Malcolm Pirnie on that aspect of it?

A I am not sure I recollect that either.

Q Were you responsible for how the sediments would be treated in the landfill?

A Yes.

Q Is that your area, that was your input into the engineering?

A In the period of '78 to '80, yes.

Q Is it your understanding of the engineering that they will literally be buried in the landfill?

A I am sorry?

Q The dredged material, that will be buried?

A It will be landfilled, yes, and covered.

Q Will there be any liner in the landfill itself?

A Yes, absolutely.

Q Did you secure a bid for the liners or a company to do the lining work?

A Not for the site that was just recently designed, but for the previous site that was completed two years ago, yes, we did.

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I have to add that the site that we previously -- yes, we had a liner, yes, that is correct.

Now, the site that we have identified this time has about 30 feet of natural clay in place. And the material is not quite 01×10^{-7} material, but it is close to that by 30 feet and a little working of it, it will be all right. That will be the bottom and then we will have a layer of sand and then we'll have a liner on top of that so if leachate gets through the first liner, we can collect it.

Q You completed the environmental study. Are you satisfied that the dredging transportation and the filling that you are going to do will have no environmental impact on the area other than to improve it?

A Well, I was not responsible when the project went finally before the Hearing Board, but it is my understanding, what I know of the project, what I heard from others and talked to others, I have no personal reservations about the project from an environmental point of view.

I feel it will be a net benefit to the environment.

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Excuse me, I would like to think about one thing I said before. Let me take time out for a minute.

I said before that the depth of clay was 30 feet. They are up to 30 feet, but they are at least 10 feet. That is the natural clay at what we call the Site 10.

Q Are there any studies that are under way now or any studies that are recommended to be done on this project?

A I'm not sure what you mean by study.

Q Are there any more analyses, any more plans, any more designs that have to be done or are now ongoing?

A I think that the bulk of our work is complete through the design phase, but Mr. Henningson can better address whether there are any lingering pieces of work that we are doing relative to the project.

Q Has the contractor been hired?

A No, bids have not been solicited. A contractor has not been hired.

Q What is the final cost per pound of PCB to dredge, cost of the design, to dredge, to transport and to fill?

A Approximately \$200 a pound.

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Q How many pounds do you expect to be involved?

A Over 100,000 pounds.

I would also like to correct something earlier. I believe I said that on the earlier project that it was over \$50 a pound.

Q Yes.

A A more accurate number is about \$85 a pound.

Q You figure this is going to cost about \$10 million to do this project?

A I believe if you multiply --

Q Twenty million?

A Yes, twenty or more.

Q What percentage of the PCBs do you estimate you will remove if you remove 100,000 pounds from the Upper Hudson area?

A We will remove more than 100,000 and I believe roughly, we will move about a third, say 30 percent.

Q As I understand it, although you were not involved in the identification of the sites, these are the sites that are the most contaminated that you will be dredging from?

A Generally, yes. We had two constraints: One, we are trying to get as much PCBs as we could as close to the site that we had selected and so there may be

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some hotter spots elsewhere that are a little farther away and less economical in the short term to get.

Q Do you know how long Malcolm Pirnie has been working on the Upper Hudson project?

A For what end? We have been working the Upper Hudson -- you mean what?

Q For the PCBs. How long have you been working on the Upper Hudson PCB project?

A I believe since 1976.

Q The environmental impact statement that you worked on, that was finally approved by the New York Department of Environmental --

A DEC.

Q Was that approved by them?

A Yes, I believe it was.

Q Was it also approved by the U.S. EPA?

A It was submitted as a draft as all EIS's are and then we had the hearing and then we reviewed the pertinent comments from the hearing, resubmitted that and I believe it is complete, but John will have to tell you whether it's been approved.

If I had our money, if we had our money from the EPA, I could say with certainty that it was approved.

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Q And we have talked about when you think the beginning will be. You just don't know at this point and funding will be EPA and this other trust fund that they have?

A EPA and whatever State resources the State makes available and I know they want to start dredging as soon as possible, but at this point it cannot be done this year.

Q Is it limited for six months or eight months that they can actually do the dredging?

A It is probably within that range, yes.

Q What do you expect the environmental benefit will be?

A In my opinion, we will reduce the amount of PCBs traveling over the Troy Locks into the Lower Hudson River, which is one of the most productive fisheries on the East Coast.

I believe with the lower input of PCBs that the values of PCBs or measurements of PCBs in the fish should decline.

Q Have the fisheries south of the Troy Locks and the concentrations of PCBs in those fish been declining over the past few years?

A I'm not sure. I heard over one year it went

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down and I don't know whether it went back up the next year or not, but John can address that better.

Q Have we discussed all the other PCB projects that you have been involved in now?

A No.

Q What other ones are there that we have not discussed?

A I have been involved in a solid waste management plan for a major industrial concern who had several plants in the United States and wished to evaluate the best ways to incinerate and/or landfill various industrial and/or hazardous wastes that they had at these various sites.

One of these wastes that I evaluated contained high levels of PCBs. That was solid, in other words, solid.

Q Did you finally recommend a solution?

A Yes. We did. We recommended that they continue their existing practice of solidifying the material by letting it cool and wrapping it in plastic and drumming it and sending it to a secure landfill.

Q Any other PCB projects?

A There was one project that we did in New Jersey. Our client had a low spot on his property

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where the local and Federal regulatory people alleged that wastes were being accumulated or had been accumulated in the past.

A sample was taken of that material by the New Jersey Department of Environmental Protection and they contracted for someone, I don't know who, to analyze the sample for PCBs.

On the basis of those analyses, they alleged that the pond was contaminated to high levels with PCBs.

We analyzed the split on the sample and indicated that the sample had too many interferences to detect PCBs at low levels, but we could say very certainly that it did not have PCBs within two orders of magnitude of what the State alleged and probably didn't have any at all because there was no evidence of PCBs ever having been on the site.

The review of the chemistry indicated that PCBs should not be formulated as a by-product. We then prevailed upon the regulatory people to review additional data that we collected and it was decided that no further action be taken or no-action be taken.

So with discussion among the Federal EPA and Region II and the State and ourselves, we decided

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it was a non-problem and no-action was appropriate.

Q Any other?

A I can't think of any.

Q Do you see any significant differences between the Waukegan Harbor project that you have been studying and the Upper Hudson project that you have studied and recommended on that make the recommendations that might be applicable to the Hudson River not necessarily applicable to the Waukegan Harbor project?

A Yes.

Q What are they?

A For instance, in the Upper Hudson, when we took the dredged water and after we treated it, one of our concerns was we had to dispose of the dredged water back into free-flowing Hudson and would have limited opportunity to contain it and we were concerned with the amount of PCBs we were putting back into the free-flowing river.

In this situation, we don't have a free-flowing river. We have a harbor and therefore, I think some of the treatment segments that we had proposed in the Upper Hudson would not be necessary here, so we could get by with less treatment because we could return

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the dredged water into an area where the dredge is still working and lose very little of it to the Harbor or to other areas. And I think that will save money and make sense. That is one, that is if we dredge.

Q Why? Is there some other remedy -- you mean dredge Waukegan?

A Yes. That is all that comes to mind readily.

Q The main concern, wasn't it, in the Hudson River, the reduction of PCBs in the fish below the Troy Locks?

A Well, that was one concern. The other was to make sure the PCB levels in the Hudson River remain low because several people were drawing Hudson River water for drinking purposes.

Q But, of course, that is always treated before it is actually used.

A Yes, but if the levels are too high, it becomes exceedingly expensive for the utility that has to treat it to treat it and he has to bear an unnecessary cost to do that and probably raise unnecessary concerns on the minds of the homeowners that are required to drink that water.

Q But the levels of PCBs found in the drinking

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water in the Upper Hudson have not risen in the last few years.

A Except when they had the 100-year flood. They rose dramatically then, and that was not an entirely natural event. It was partially man-made.

Q That was due to the volume of water rather than the content of PCBs per gallon of water, wasn't it?

A It was both. Once the flood started, it raised the PCB levels by rolling up the sediments.

Q When did that occur?

A I believe in the late '70s.

Q Since you have been on the project and in 1978, there has been no increase, has there, in the concentration of the drinking water?

A I am not sure exactly what the data are, but if I have to give a thirdhand recollection which was sort of a composition of views of my compatriots in my office, I would tend to agree with you.

Q Apart from the drinking water, isn't the purpose of dredging of the hot spots in the Upper Hudson River to reduce the PCB levels in the fish below the Troy Locks?

A As I indicated before, that was one of the reasons.

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Q What were the other reasons?

A Whenever you have river deposits, river material, as the river moves over the course of time and as it flows down, it is going to move these deposits in the free-flowing river. And some of the material will be removed and deposited elsewhere. That conceivably will then become an impediment to navigation and that is a third reason, therefore, that the material that is not removed will deposit itself in navigation channels and will have to be removed and conceivably could be at a level that would be a cause for concern.

Q If the material is actually removed and it requires some form of dredging, the dredging required there is not necessarily the dredging you have in mind in the Upper Hudson?

A It may be.

Q You are dredging, transporting and filling on the basis that you have a toxic material. The type of dredging you are talking about is caused by the natural movement of sediments, is simply dredging for navigational purposes, does not involve the kind of elaborate procedures that you envision for the Upper Hudson.

A Unless the materials that have to be removed for contamination purposes are found to be contaminated and therefore toxic and hazardous.

Q Other than the navigational aspect and the drinking water and the third and only other remaining is reduction of PCB levels in fish below the Troy Locks, right?

A To the best of my knowledge.

Q You don't really expect the sediments that are in the Waukegan Harbor to matriculate out to the Lake, do you?

A Under normal conditions, no.

Q What abnormal conditions would you anticipate might cause them to migrate out into the Lake?

A I would envision if we had some very extreme hydrological event: Flood, massive rainfall, we might begin to move serious amounts of PCBs out of the North Ditch area into the Lake and we might also move some of the material, redisturb the material as the Lake levels go up and down and have it begin to migrate out of the Harbor. Whether it got out in one event or would take more than one event, I don't know.

Q How much material do you estimate has moved from the Slip No. 3 to the Lake in the past 25 years?

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A I have no such estimate.

Q Do you know if any has?

A Pardon me?

Q Do you know if any has?

A If any material has moved into the Lake?

Q Yes.

A Yes. My reading of all the information that was provided beforehand, it is my opinion that material has moved from the North Ditch and Harbor area into the Lake.

Q What specific material do you have reference to?

A The work that was done by Hydroqual comes to mind first.

Q What in that material causes you to believe there might be a migration?

A That report information collected by others that PCBs are migrating out of the Harbor into the water column and that they are moving out of the North Ditch area via surface water mechanism, whether that be soluble PCBs and whether that be attached to sediment particles.

There is further information relative to PCB levels in the near-Harbor area, I believe as defined

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by a 10 kilometer radius that indicates levels are elevated relative to the rest of the Lake in that area.

An inference that was drawn and that I cannot dismiss is that those elevated levels are at least in part related to Waukegan Harbor.

Q Do you know of any scientific study that has been able to establish beyond a reasonable scientific certainty that PCBs have migrated from Slip 3 into the near-Lake Michigan?

A I believe the Hydroqual report does that.

Q At least as far as you are concerned?

A That's my opinion.

Q What percentage, if you know, would you estimate or has been transported from Slip No. 3 out into the Lake, at least, say, the past 25 or 30 years?

MR. HYNES: Percentage of what?

MR. PHELAN: PCBs.

BY THE WITNESS:

A I have no idea.

BY MR. PHELAN:

Q Would it be a substantial percentage?

A I have no idea. The Hydroqual work focused on what was occurring recently, after the discharge of PCB material into Slip 3 had ceased.

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I would assume that when the material was being discharged, my opinion is that when PCB material was being discharged, that higher amounts of material than were indicated in that model were being transported out of the Slip 3 and hence, through the Harbor, and that is my opinion.

Q For purposes of your opinion, when do you think was the last date that PCBs were discharged into or from Slip 3?

A The early '70s.

Q From your analysis of the sediments in Slip 3, can you tell whether in fact these sediments containing allegedly PCBs have been there for 20, 25, 30, 35 years?

A I cannot say whether they have been there three years or 25 years or one year or 50 years.

Q Would it be your opinion that the last discharged PCBs would be the first to go into the Lake Michigan or the first discharged PCBs would be the first to go into the Lake?

A Could you read the question back?

Q I will be happy to rephrase it.

Would it be your opinion that the last PCBs discharged would be the first to go into Lake

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Michigan, migrate into Lake Michigan, or would it be the reverse, that it would be the first PCBs discharged that would go into Lake Michigan?

A I find it difficult to answer that question.

Q Can you answer it?

A It is very broad and speculative.

Q I don't think it is speculative.

A Well, a lot depends on understanding the exact nature, in my opinion, the exact nature as to how the wastes were discharged over the course of time.

If they were discharged in two phases, if the PCBs were a separate phase and water was on top of that or there was emulsion or whether it was merely soluble PCBs or what, I would think would give you -- I wouldn't doubt that all of those things did occur. And then you might have a whole wide range of answers. Some of the first PCBs might have been the first to go out, whereas some of the last PCBs may have been some of the last to go out.

Q You have read the information and reports and I take it you have been given all the information you need for your opinions.

A Yes, I feel so.

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Q In the course of that, weren't you informed as to how the discharges were allegedly made?

A I was informed they came out of a pipe.

Q All right. At what rate?

A I don't have any recollection of any information as to the rate or the variability of the rates. We may have some.

Q You really don't know how much water or how much discharge actually came out at one time?

A I don't recollect anything.

Q Or what percentage of the discharge contained PCBs?

A I do recall some data on concentrations. I recall there is some data on concentrations, at least at one or two points in time, but I don't recollect what the data were.

Q When you reviewed the samples --

A I don't feel that that information has influenced any of the opinions relative to the environmental engineering options we have proposed.

Q You didn't really care how much came out or in what percentages?

A Oh, I cared how much came out.

Q It didn't make any difference to your remedy?

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A It makes somewhat of a difference, only insofar as I care where it came out. If it came out in Slip 3, that influences my thinking and supports, I guess, the thoughts of others that the bulk of the PCBs in the Harbor should logically be in Slip 3.

So as far as it affected my thinking that way, I was directed towards either removing the material in Slip 3 or encapsulating Slip 3.

Q Wasn't it important to you, Mr. Brownell, as to the amount of PCBs that were actually discharged?

A Yes, I have seen information that indicates there are at least three or four hundred thousand pounds, or at least, let us say, there are three or four hundred thousand pounds, in that range, in the Slip 3 area.

Q I understand it was important therefore to know the amount of PCBs. Would it be important to know how much actually occurred at the outfall or at the pipe at Slip No. 3?

MR. HYNES: You mean on a year-to-year, day-to-day basis? Is that what you are asking?

BY MR. PHELAN:

Q You don't seem to care how much was discharged. You only seem to care that there are some opinions there

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are some three or four hundred thousand pounds of PCBs in Slip No. 3?

A It is my opinion, reviewing the data developed by others, that there is at least that much in that slip.

Q But you cannot tell me today how much discharge actually came out of the pipe or what percentage of it was PCB over what period of time?

A The approximate time was 25 years.

Q And you can't tell me whether it migrated then or migrated now?

A Excuse me. 20 years, let us say, roughly. 20 years and -- excuse me, I didn't hear the rest of the question.

Q Whether it is migrating now, was migrating then or is just migrated now?

A My opinion is it is migrating now and I believe there is information which indicates how much is migrating now.

It is further my opinion that material migrated in the past, most likely at a higher rate, but I have no idea how much higher, and I believe the material is currently migrating.

Q That is based on the Hydroqual report?

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A That is based on my interpretation of all the information here -- not all the information, but information I have looked at and the Hydroqual report must be included in that.

Q Let us set aside the Hydroqual report.

What information do you base your opinion on that it is migrating, has been migrating and will continue to migrate?

A The key information might be or one set of key information is that the PCB concentrations in the non-soluble phase or at least in the water column at Slip 3 are higher than they are in the Upper Harbor. And the Upper Harbor are higher than they are in the Lower Harbor levels. The data, I think, support that quite accurately and that gradient of PCBs in the water column, it is fairly clear in my mind, if you have that kind of gradient through diffusion and other techniques, physical phenomena, that material is going to migrate.

Q Let me assume for a moment that very small percentage of the original PCBs in Slip 3 have migrated. Let us assume it is on the order of less than one percent.

Would that fact standing alone in any way influence the choices of remedies that we have already discussed and that you prefer?

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A I don't believe so because I would say that one percent still would represent a lot of pounds of PCBs; thousands of pounds of PCBs, and that is a substantial migration.

Q I said that they had migrated up to that point. Let us make a further assumption and say that less than 10 pounds per year were migrating into the Lake. Would that in any way affect the options or remedies that you select?

A My opinion on the data indicates more than that is now migrating.

Q I am asking you to make the assumption.

A I think some of the remedies that we propose will get it down to below that substantially.

Q I understand that, but I am asking you to fantasize with me for a minute and assume there are less than 10 pounds per year that will migrate in the future. Would that affect in any way the preference of the opinions that you have given us in respect to the preferable or non-preferable remedies?

A Slightly.

Q Slightly?

A Yes.

Q Tell us how, in what way would it modify your

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opinion?

A We have a wide range of options that we evaluated. They are feasible and they vary from dredging, just Slip 3 all the way to down to about the beginning of Slip 1.

Insofar as Harbor is concerned and only insofar as the Harbor is concerned, if less is indeed migrating out, then I might have a tendency to think more favorably about dredging less of the Upper Harbor area and focus more on the Slip 3 area. But I am not sure that that is anything more than a slight change.

Q You consider from the point of view --

A Excuse me. That is only from one narrow point of view or one narrow aspect of this particular problem. The remedies that we are talking about are based upon two things: One, to make sure the material is properly contained and so that it does not have a sudden, or there is not a sudden release from some sudden event, and also to cut the annual discharge rate. We are trying to think of both.

Q The discharge, you mean from the Harbor to the Lake?

A Yes, or from the slip to the Harbor.

Q But I have asked you to assume less than

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10 pounds per year were migrating and then asked you if that would then change your opinion and to the number of options and preferred and non-preferred.

A Yes.

Q Namely, dredging only the Upper Harbor?

A Yes, and only part of that perhaps.

Q I see.

If I asked you to assume in addition to that that the concentration of PCBs in fish were either diminishing in the deeper fish and either remaining the same or diminishing in the near fish in the Harbor, would that in any way change your opinion as to the preferred or non-preferred remedy?

A As I indicated before, the options, we are looking at, I think, many different aspects. The fisheries is only one aspect and I don't believe it would change our opinions at all.

Q I would like you to make another assumption. Assume that the deep fish are actually showing a reduction in the concentration of PCBs and the near fish are remaining the same or going slightly lower, but less than 10 pounds is migrating and that a rerouting of the drain into Slip No. 3 can be done which would prevent any of the materials in that area from sliding

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into Slip No. 3.

Would those three assumptions cause you to alter your opinion with respect to the preferred versus the non-preferred remedies?

A I don't think the question is answerable in the form you have presented it.

Q I will reform it then.

We have discussed the first assumption about migration at 10 pounds per year and less; the second assumption about the deep fish and near fish, and the third that we have a rerouting of that drainage, that siltation that you talked about into Slip 3. We stopped that and rerouted it somewhere else.

A I don't believe that would change it other than slightly, as I indicated before, for the 10 ppm.

Q It would change it so far as the siltation was concerned in Slip 3. It would just stop the material from coming from the outside.

A Only partially if you use the drain, but more specifically, you have to contend with the variation of Lake levels.

Q Let us go one by one.

Would the siltation change by rerouting the drain coupled with the other two hypotheticals I

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have given you cause you to change your opinion with respect to the preferability or non-preferability?

A There are too many ifs, ands or buts which I don't think may occur and some that may or may not and I don't think have any bearing.

Q That may be true, but the Judge will have to rule on that at the right time.

As an expert witness in this case, you are required to fantasize with me and some may prove to be true and maybe some won't, but for the purpose of our examination, I ask you to assume they are.

I am asking you 10 pounds or less; lowering the PCB content in deep fish and near fish, and the rerouting of the siltation process in the pier in Slip No. 3.

A Okay. As I have just indicated, rerouting of the siltation problem does not address the question of lowering the Lake levels.

Q We will get to that.

A Therefore, the answer that I give is really the answer I just gave relative to the 10 pounds' aspect of it, that it would only change it ever so slightly -- let me rephrase that, change it slightly.

Q Now, we have talked about the Lake changes

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and I think that Lake level is actually part of Exhibit No. 6 --

A I believe that's correct.

Q Exhibit 7.

As I understand it, based on this, it is your opinion that the Lake level hit a high in 1974 of 581 feet and a low, this is all within the last 21 years, 575-1/2.

A Is that a question?

Q Is that your --

A May I refer to that?

I would say it is about a 5-foot swing in 20 years. I would say about 5-1/2-foot swing.

Q Now, as I understand your opinion, this 5-1/2-foot swing in this case, in the course of some 20 years, causes certain navigational difficulties in the Harbor?

A Yes.

Q Which occur as a result of a ship's inability to navigate in a harbor when there is a shallow harbor.

A I would say that is one factor, yes.

Q Thus requiring removal of the sediments in the Harbor in order to enable ships to get in and out of the Harbor.

A Well, if normal dredging is done on a routine basis, then I would think the problem could be avoided, but if you allow me to add the assumption that no dredging has occurred for at least five years and were not to continue to occur for the next 20 years, then I would be able to say quite certainly you would expect these problems to occur.

Q Do I understand that one of the reasons that you have contemplated the remedies that you have is because of this change in Lake Michigan water level?

A Yes.

Q That is a consideration?

A Yes.

Q It is a serious consideration?

A Yes.

Q And it is serious because you think some dredging has to be done at some time?

A For that alone, plus other factors.

Q What if you were to assume that Slip No. 3 were never used again for navigational purposes.

A Yes.

Q And that another place was provided for Larsen's?

A Yes.

Q And Slip No. 3 remained as it is today and went up and down with the Lake.

A Um-hmm.

Q With no ships, no boats, nothing going in there, so it really didn't matter.

Would you make that assumption?

A From a navigational point of view, it didn't matter.

Q It was going to become an area that no one was going to park a boat in.

A Yes.

Q You made my other three assumptions of 10 pounds per year, reduction in PCB concentration in deeper fish and near fish, and the Lake Michigan, we were simply going to remove the Slip No. 3 from the navigational area.

Would that change your opinion as to the remedies that were preferred or non-preferred?

I am sorry. I almost failed to name the third assumption: Namely, that we would reroute the materials that were flowing into Slip 3.

A All the materials?

Q Pardon?

A All of the materials?

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Q At that point, it wouldn't make any difference, but carry my fantasy anyway.

A As I indicated before, I don't believe that all those -- it will come to pass and they are reasonable, but going along with --

Q With my fantasies.

A -- with your fantasies as you so eloquently described them, I believe it would change my opinion slightly.

Q How would it change it?

A I would be far less concerned about dredging Slip 3 and would focus more on trying to contain the materials that are there in place so that a sudden event doesn't allow them to become more mobile and leave the Slip 3 area.

Q At that point, your only concern is that these materials will migrate into the Harbor and ultimately into the Lake, is that right?

A My concern is not my only concern in this project. I have many concerns about the North Ditch, so that is not my only concern.

Q We are just concentrating on Slip 3.

As far as Slip 3 is concerned, your concern, assuming my fantasy now, is only that some

sudden event will cause these materials to move from Slip 3 to the Harbor and ultimately to the Lake.

A No, I believe the volatilization will continue out of the Slip 3 area.

Q What will that do?

A That will put the PCBs into the air.

Q They are already there, aren't they?

A Yes, but it will put them in greater concentration and at ground level.

Q Do you have any indication now that they are in greater concentration or levels in the air at or near Slip 3 than they are in any other place in the Waukegan area?

A I have seen some data; I believe it was collected over in the North Ditch area, which indicated there are some PCB values in the air that are higher than back ground.

I don't believe I have seen anything in Slip 3.

Q Am I stating your concern then, assuming my fantasy is simply that the PCBs will migrate into the Harbor and ultimately out to the Lake and for whatever may happen there, that is enough of a concern on your part that you have opined there ought to be something

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done with the PCBs that have collected or accumulated in Slip 3?

A With the caveats that I don't agree with the reasonableness of your fantasy, I don't feel it is within the realm of likelihood. But if we were to adjourn to another planet and those assumptions were allowed to prevail by changes in the laws of chemistry, physics and some other things, yes, then I would agree that you stated it properly.

I just want to put it in the perspective that I was viewing it in.

Q What other sudden events did you anticipate would cause the PCBs to move from Slip 3 into the Harbor and into the Lake after we have all joined another planet?

A I believe a sudden hydrologic event, sudden rains, extreme rain, flood; I believe the spill of petrochemicals in the Harbor area which could conceivably drain into the Slip 3 area, whether they be through pipes, groundwater or overland, could conceivably make the PCBs much more mobile.

Q Have you done any historical meteorological data to support the likelihood of a flood occurring in the Waukegan Harbor area?

A No. We have reviewed what the 100-year flood level is.

Q What have you found?

A That it will overtop the bulkheads within the Harbor.

Q What will overtop, the Harbor?

A The water level will go above the bulkheads and then it will have to drain back out again and I believe, I don't believe anyone has really looked at the more extreme events.

Q Have you put a number on any of the likelihoods, either floods, extreme rains or chemical spills occurring in a fashion that would cause the PCBs to move?

A No.

Q If I said it was a chance of 1 in 10,000, would you agree or disagree?

A I would have no idea.

Q Even though you don't have any idea, you still feel that a sudden accident or a sudden change is of sufficient moment that given my other assumptions, you feel something ought to be done?

A Yes. I believe it's too much PCB in that area and it is not properly contained and to leave it

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in its present state would be in my opinion a mistake.

Q So basically you think it's because something can move it and because there is an awful lot of it there, but we have not really discussed in any detail how you came to the conclusion there is a lot of it there other than these reports you read and the samples that are reported in those, is that right?

A Well, we drifted back to this planet, I feel, and unless -- and I must add again that the previous comments I made were relevant to the condition which I don't agree was reasonable, which you stated. With all the caveats you provided, I believe that all those things are happening or can happen and that shapes the overall --

Q But for my purposes here, I'm asking you to assume they aren't and I expect we will show that they aren't. What I suggest is in fact occurring isn't there, even though it is a fantasy of mine. If that is true, we are left with your opinion that you're concerned because of the amount of PCBs and you are concerned because either flood or extreme rain or spill of chemicals might cause that to move out into the Harbor and out ultimately into the Lake, is that correct? Is that right?

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A Yes.

Q Was the Upper Hudson project your first contact with the Environmental Protection Agency through the environmental impact statement you prepared?

A I don't understand the question.

Q What was your first contact with them as a client or subcontractor or some relationship with Malcolm Pirnie?

A We've hardly ever worked with the Environmental Protection Agency.

Q It is clear to me though that in that project, you were.

A No, sir.

Q No, you are not? You are working for the State of New York?

A That is correct.

Q Which is being funded, correct, by the Environmental Protection Agency?

A Yes, but the funding was arranged after my involvement. It was arranged in 1980, long after we started our involvement.

Q So you consider New York the client?

A Yes. The EPA, and I wish they'd pay my bills

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but they are not paying my bills. The State of New York has that one.

Q What else, when else have you worked for directly the EPA, you and Mr. Henningson?

A Me personally?

Q Yes, through Malcolm Pirnie.

A I never have worked directly for the EPA.

Q But obviously Malcolm Pirnie has?

A Yes, on a few occasions.

Q On enough occasions to say they are not credit worthy anymore?

A No, no. We didn't say they aren't credit worthy. We just don't like negotiating contracts with them.

Q But you yourself have not directly?

A Yes.

Q Could you give us any estimate as to the amount by volume of hours or by moneys that the Malcolm Pirnie organization has had with the EPA?

A Directly?

Q Yes.

A Prior to three or four years ago, none, and within the last three or four years, it might represent, say, less than one percent of our annual income.

Q I think when we went through chronologically your contact with the U.S. Attorney, you indicated you had gone back to White Plains and you and Mr. Henningson decided how you would divide this up.

A Yes, I believe I did say that.

Q Can you tell me a little bit about that. Over what lines did you decide to take responsibility for and what lines did he assume responsibility for?

A My recollection is that we agreed that John should focus on the investigation of the fisheries and investigation of groundwater and be partly responsible for the review of the data that I also had part of that responsibility. And my main responsibility was to work with John in trying to develop the options which seemed to make sense that we hoped would be feasible as I received some input from him relative to some of these other questions.

I also took on the direction of the investigations we did relative to siltation in the Slip 3 area and had one of my staff look at the volatilization.

John and I shared staff on this and he was in the hospital for a period of time and then I was out of the office for a period of time, so on some of

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the things, he on any one day might have been directing one of my people and I his, so that basically was the responsibilities we had.

Once we had a feeling for the scientific information and we had gone through and thought about and done some preliminary work about options and got together and talked more and said, "Well, let's see if we can't cull it down a little." And we also came up with a couple of sub-options, if you will, to try to get the ideas to incrementally what do we gain for dredging a little more, a little less, or digging a little bit more, little bit less.

Q When you say John had responsibility for fisheries and groundwater and then all the data, was that all the background material that went into Brownell Deposition Exhibit No. 2?

MR. HYNES: I think you misstated. I think he said part of the data review. You stated all of it.

MR. PHELAN: I thought he said all of it.

MR. HYNES: Just part of the data.

BY THE WITNESS:

A John and I, I believe, looked at the data that were performed. He read all the material, I believe. I also read it relative to cross checking of samples to

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see if the data looked valid and I know my feeling was that it was valid and you can -- or at least the bulk of it was. And I am sure you will feel free to talk about that with him, too, what his opinion was.

Q Did you gather some of the original data yourself or was he responsible for gathering all the original data?

MR. HYNES: What do you mean by gathering all the original data?

THE WITNESS: It is unclear to me what you mean by that.

BY MR. PHELAN:

Q All the information you used to gather or base your opinions on.

Who was responsible for accumulating the data or collecting it, whatever?

A John had responsibility for collating it and making sure it was properly logged in and documents were controlled that we received from the U.S. Attorney.

We gathered no raw data as I indicated before. We gathered information and reviewed others' data that was available and/or made available to us.

John made most of the requests, initial requests, but I also made requests to the U.S. Attorney

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for additional information which we thought might be available that they could get more easily than we could.

I believe there are two memos in there that you will see where information was transmitted to me at my request.

Q Did you request all the information from the U.S. Attorney by letter or was there --

A No.

Q Was that by phone?

A Most all of it was by phone.

Q Apart from the people at the Malcolm Pirnie organization and the U.S. Attorney's Office that you consulted, did you consult with any other person in connection with your testimony you are about to give and that which you have already given?

A What do you mean by consult?

Q Did you discuss with anybody, ask them for their opinions, base your opinion on information they gave you?

A We discussed aspects of the project with others. I don't believe I asked for their opinion, but we had conversations with people from Ellicott Dredging or Ellicott Machine.

Q Would you spell that, please?

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A E-l-l-i-c-o-t-t Machine.

Q Dredging, did you say?

A Yes, Ellicott Machine Company, I believe, but they are the ones that make dredges.

We talked with National Car Rental which provides mudcat dredges.

I believe we talked to one or two vendors that manufacture incinerators. I talked to one or two gentlemen -- two gentlemen, I believe, in the U.S. EPA, Region II, who have responsibility and/or knowledge of the Mobil rotary till incinerator that EPA has a contract for and has available in New Jersey.

I believe we talked with some people from Great Lakes Dredging and I believe we had some brief discussions with some people from Gahagean & Bryant, which is a Tampa-based firm.

Q Any others?

A None that come to mind. There may have been others.

Q Are there any calculations that you have done or anyone in your employ has done that you still have copies of that are not referred to in Brownell Exhibit 2?

MR. HYNES: Or 3 through 9.

BY MR. PHELAN:

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Q Or Exhibits 3 through 9, right.

A I don't believe we have any calculations other than those where the results are reflected in these documents.

Q And you are going to send to Mr. Hynes your notes that you have?

A If I have any.

Q If you have any.

I take it from your last answer, you didn't consult with any Environmental Protection Agency folks about your opinions here or reports here?

A We did not do that. I do believe that you will have to talk to John, I believe there may have been one conversation that was a conference call between someone at EPA here and somebody, I believe, in your office (indicating), but I don't believe that had anything to do with the report, conclusions or anything else, but it was a hunt for some of the technical information.

Q I think you told me before you have not recommended any studies or any further studies be done.

A To develop an opinion, no.

Q I haven't had a chance to go through your bibliography, so I don't know: Did you consider the

Cherkauer report in your bibliography? ← ?

A I believe so, yes.

Q To what extent?

A We read it. I believe I read it. I don't have any real recollection of what was in it other than it discussed groundwater movement.

Q Do you agree or disagree with it generally?

A I don't recall it well enough to offer you an opinion.

Q How about Dr. Thomann's report?

A Yes, I read the Thomann material that he and Mr. Kontaxis put together. ← ?

Q Do you agree or disagree with his conclusions

A Generally I agree.

Q Specifically?

A Pardon me?

Q Specifically you disagree with some of his conclusions?

A Yes.

Q Which ones?

A Well, he had indicated based on the information that he had that 95 percent of PCBs were in the west end of the North Ditch area. I think it is more like 85 percent.

Q Any other conclusions you disagree with?

A No.

Q I take it that although the Hudson River data and studies are not contained in the bibliography or in the Exhibits 3 through 9, that generally you have used some of the knowledge or the skills acquired there in connection with that project with this project here?

A Excuse me, you said not included?

Q They are not all included, are they, the Hudson River project in Deposition Exhibits 2 through 9?

A I cannot say that they all are not included, but I believe that virtually they all are included although we only, we did not rely on the vast array of that documentation other than insofar as -- let me back up, insofar as it contributes to our general experience.

Over the course of time, certainly at one time or another, we have been aware of that material and that information and used it to whatever work we did in this area.

MR. PHELAN: Off the record.

(Discussion off the record.)

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(At 4:15 o'clock p.m., the
deposition was adjourned to
be resumed on Wednesday,
August 11, 1982, at 9:00
o'clock a.m.)

**ENFORCEMENT
SENSITIVE**

IN THE UNITED STATES DISTRICT COURT
FOR THE NORTHERN DISTRICT OF ILLINOIS
EASTERN DIVISION

THE UNITED STATES OF AMERICA,)	
)	
Plaintiff,)	
)	
-vs-)	No. 78 C 1004
)	
OUTBOARD MARINE CORPORATION and)	
MONSANTO COMPANY,)	
)	
Defendants.)	

The deposition of RICHARD PAUL BROWNELL,
called by the Defendant Outboard Marine Corporation
for examination, pursuant to notice and agreement
and pursuant to the Rules of Civil Procedure for the
United States District Courts pertaining to the
taking of depositions, taken before Thea L. Urban,
a Notary Public in and for the County of Cook, State
of Illinois, and a Certified Shorthand Reporter of
said State, at the office of the United States
Attorney, 219 South Dearborn Street, Room 1486,
Chicago, Illinois 60604, on the 11th day of August,
A.D. 1982, commencing at 9:00 o'clock a.m.

PRESENT:

MR. JAMES T. HYNES
(Deputy Chief, Civil Division
Office of the U.S. Attorney
219 South Dearborn Street, Room 1486
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- and -

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PRESENT: (Continued)

MR. JERROLD H. FRUMM,
(U.S. Environmental Protection Agency
230 South Dearborn Street
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appeared for the United States of
America;

MS. BARBARA A. CHASNOFF,
(Environmental Control Division, Northern Region
Office of the Attorney General of Illinois
188 West Randolph Street
Chicago, Illinois 60601),

appeared for the State of Illinois;

MR. RICHARD J. PHELAN,
MS. ROSEANN OLIVER,
(Phelan, Pope & John, Ltd.
180 North Wacker Drive, Suite 500
Chicago, Illinois 60606),

- and -

MR. JEFFREY C. FORT,
(Martin, Craig, Chester & Sonnenschein
115 South LaSalle Street, Room 2400
Chicago, Illinois 60603),

appeared for Outboard Marine Corporation;

MR. JAMES H. SCHINK,
(Kirkland & Ellis
200 East Randolph Drive, Room 5800
Chicago, Illinois 60601),

appeared for Monsanto Company.

ALSO PRESENT:

MR. HUGH THOMAS.

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I N D E XWITNESS

RICHARD P. BROWNELL

	<u>Direct</u>	<u>Cross</u>	<u>Redirect</u>	<u>Recross</u>
By Mr. Phelan (Resumed)	3			

By Mr. Schink	257			
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By Ms. Oliver	259			
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RICHARD PAUL BROWNELL,
having been previously duly sworn, was examined and
testified further as follows:

DIRECT EXAMINATION (Resumed)

BY MR. PHELAN:

Q My notes show that we last discussed those
persons that you contacted other than those people
from the U.S. Attorney's Office and you mentioned
some Great Lakes Dredging Dock Company and others.

Were there any experts that had been
previously retained by the government that you dis-
cussed your findings with, or your opinions?

A No.

Q You did not call up Mr. Thomann or anyone
from Mason & Hanger?

A No.

Q Or Gil Veith?

A No. I did think of one other outside group
that we talked to: Ocean Surveys, Incorporated.

Q You have given us Exhibits 2 through 9. Of
those exhibits, which was the first that was prepared
by Malcolm Pirnie.

Do you want to look at them so we can do
this in some chronological basis?

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Brownell - direct (Phelan)

A I would say that the first one that was started was the bibliography.

Q Who was the person that was in charge of the bibliography?

A John Henningson was responsible but as I recollect, Tom Ratvasky was the person who was on a day-to-day basis, managing the documents.

Q Do you want to spell his name again, if you remember?

A R-a-t-v-a-s-k-y, I believe.

Q Who described the universe of documents that you wanted to look at? Was that Mr. Henningson or was that you?

A I think we both did it together. We wanted all the information on the Waukegan Harbor and we should take a look at all the information on the Acushnet Estuary.

Q Where is that?

A That is in the Boston area. It is in the Boston Harbor, actually.

Q The Acushnet Estuary -- what else?

A And the Upper Hudson project.

Q What other documents did you want to look at?

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A I believe we asked for the literature to see if there was other information but I'm not sure.

Q Is there a computer that you plugged into in order to determine whether there was any relevant information that you might pick up about the Waukegan Harbor?

A I don't know if we did that. We have access to computer search capability.

Q Did you have on-hand, all the information relating to the Waukegan Harbor which had been published, either by the Illinois EPA or US EPA or any of the other various organizations that had looked in the Harbor?

A I can't say I had it all. I had all that I needed.

Q Did the Government supply you with all of the reports of opinions that had been furnished to them by their other experts?

A I cannot say whether everything was provided. I know one exception. We did not look at the alternates that Mason & Hanger developed.

Q Did you read any of the depositions of any of the experts of the Government?

A No.

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Q Mr. Thomann's deposition, or did you look at that?

A None.

Q None of those?

A No.

Q Did you look at any of the depositions of any of the experts that had been produced and examined by the Government offered by Outboard Marine Corporation or Monsanto Company?

A No.

Q Do you think any of those are relevant to the opinions, any of those experts?

MR. HYNES: The depositions now?

MR. PHELAN: Yes, their testimony.

BY THE WITNESS:

A I don't believe that they would have any significant impact on the opinion that I am rendering.

BY MR. PHELAN:

Q In terms of the public health aspect of the Waukegan Harbor, are there any experts whose depositions you requested or thought you should have requested to assist you in evaluating the public health aspect of the Waukegan Harbor?

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A No.

Q Are you familiar with Dr. Thomas Milbe?

A No.

Q In terms of the aquatic life, fish studies, is there any deposition or depositions of any experts of OMC or Monsanto with respect to fish life that you were interested in seeing?

A None that I was, but you might ask Mr. Henningson the same question.

Q You were interested in talking to Mr. Larsen. Did the Government suggest you talk to him?

A No, we asked if it would be all right.

Q Asked who?

A We asked the U.S. Attorney's office. They didn't suggest it.

Q I take it that almost immediately after you were contacted by the Government and met with them here, you decided you wanted to talk to Mr. Larsen?

A We thought it would be efficient because we were going to see the Harbor and since he worked at the Harbor, it seemed to be an appropriate utilization of our time.

Q Have you in the course of your work on the

Upper Hudson and the other PCB problems that you discussed with me yesterday, discussed public health problems with any experts in the public health field?

A I personally have not but John would be better able to address that. I believe the answer will be yes.

Q Is that also true as far as you are concerned of the aquatic and fish studies?

Have you contacted any of those folks?

A I haven't. In the Upper Hudson, we worked with an environmental steering committee and that committee was made up of environmentalists, professors from several universities. I am not sure whether they were experts in the areas of sciences or public health or what, but there were several experts that were on that steering committee, if you will, and in the course of the project over many years, we have had many discussions with that committee.

Q Do you consider Brownell Exhibit No. 2 a complete listing of all of the documents that you and Mr. Henningson have deemed relevant to the opinions that you have given and that you expect to give and that he will probably give?

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A I can speak for myself, yes, and I believe the answer overall will be yes, also.

Q The description sheet forms that are found here in Brownell Deposition Exhibit No. 2, who made up that form?

A I don't know exactly who was the person, but it was done at Mr. Henningson's direction.

Q Was this a form that you used in other studies at Malcolm Pirnie or was this form made specifically for the Waukegan Project?

A You would have to ask Mr. Henningson. I don't generally use that kind of form.

Q The location of the document indicates MPI, NYSDEC, Other. I assume MPI is Malcolm Pirnie, Incorporated.

A That is correct.

Q What is NYSDEC?

A New York State Department of Environmental Conservation.

Q The forms that are contained here were filled out by whom?

A I would have to look at the initials on each particular form.

Q I think they are initialled by the same individual.

A Do you want to go through each one?

Q I went through them very quickly and they look like they're all the same.

A No, they are not.

Q They are not?

A No.

Q Let us look at Roman WK I 103. Who is that?

A Mr. Ratvasky.

Q It looks like WK I 100 series are all Ratvasky?

A Yes.

Q How about II?

A The same.

Q How about III?

A The same.

Q How about IV?

A The same.

Q How about V?

A The same.

Q How about VI?

A Same.

Q How about VII?

A Same.

Q How about VIII?

A Same.

Q IX?

A Same.

Q X?

A Same.

Q XI?

A Same.

Q XII?

A Same.

Q XIII?

A Same.

Q XIV?

A Judith Bedard and Mr. Ratvasky.

Q Is there one last one?

A Let me make sure. This one has it mixed.

XV, Judith A. Bedard.

Q Just as an example, WK 100, 101, 102 and 103 consist of the US EPA Region 5's document on Contamination in Waukegan, Illinois. 101 is Marion, Bradford and David Goldberg's Greater Lake Michigan

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Federation publication;

Kenneth McFall, Marubeni America Corporation:
PCB Cleanup Work, Waukegan Harbor.

Have you read each and every one of those documents?

A I would have to look at them and see if I have, whether I can recollect.

I recollect reading WK I-100. I don't recollect the other three.

Q Again, did you make any notes after you read any of these documents?

A To the best of my knowledge, I made no major amounts of notes. If I made some skimpy ones, I don't even recollect where they would be at the moment but I don't believe I made any notes of substance.

Q Did you underline or headline any of the parts of those articles when you read them?

A I don't believe I did, no.

Q Who was the person who decided that all of the relevant documents in these studies in fact be gathered and be placed here in Brownell Deposition Exhibit No. 2?

A John Henningson and I did that jointly. We were approaching it from two different directions.

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He was looking for all the scientific information and I was looking for overviews of the situation on those scientific models and other things which could be translated into engineering-type of information, so that we both had our look at it and trying to decide whether we had adequate information. And we decided we did.

Q Your point of view was an overview. Maybe you can describe what you consider to be an overview.

A The scientific information and the data are rather voluminous and once John looked at the analytical techniques and the information that was provided, establishing the cross checks and the quality control, we were then able to use a lot of information. We had some people plot the information up, some of the information relative to where the PCBs might be, and at least in the North Ditch area. I don't believe we did it in the Harbor.

Then with that in mind, once I had some calculations, some rough calculations made as to where the PCBs were in my mind, at least, in the North Ditch area, and how much was in the Harbor

area, we were then able with that background information from my perspective or overview, if you will as to all the modeling information, review that, try to distill it in my mind.

I was able to come up with a list of alternates which I believed were worthy of evaluation to the point that we could put costs to them and try to establish the overall feasibility from an environmental engineering point of view.

Q What was the next document that you generated at Malcolm Pirnie after the bibliography?

A I am sorry. I have a problem with the question in that a lot of the documents, the ones that were started earliest were not necessarily the ones that were finished earliest.

Q What's the next one you started first. You completed the bibliography, started that and completed it first.

A Let me just check something. Time out, please.

Could we break for a few minutes?

MR. HYNES: Sure.

Brownell - direct (Phelan)

184

(Whereupon, at 9:40 a.m., Mr. Hynes, Mr. Frumm and the deponent left the deposition room, subsequently returned at 10:10 a.m. and the following further proceedings were had herein:)

MR. HYNES: Let us go back on the record.

Are you asking him which of these eight documents, the ones that are in front of us now, chronologically, when they were prepared or which was begun to be prepared at least in this form initially?

MR. PHELAN: I thought my question was which one of these documents did you begin first after Brownell Deposition Exhibit 2.

MR. HYNES: Okay, not necessarily in this final form but begun preparation on.

MR. PHELAN: Right.

BY THE WITNESS:

A The documents can be put into two categories. To do it most easily, the one we started on last was number five.

BY MR. PHELAN:

Q You started on five last?

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A Yes, but we started on all of the others first, at about the same time when John and I sat down and said this is the kind of information, these are the kinds of information we would like to work on.

Q You started on three, four, six, seven, eight, nine at the same time?

A Yes.

Q And the last one was five?

A The last one we started was number five.

Q Which ones did you complete in what order?

A I would say that the dates that are on the individual documents are a fair representation as to when they were completed with the exception -- well, a fair representation.

For instance, document number three, labeled Waukegan Harbor PCB Problem, Memorandum, Mulligan to Brownell was essentially completed in its present form on the 4th of August but I had been receiving input and talking with John and directing him and advising him on a regular basis for several weeks prior to that and he had given me some rough costs and some very preliminary numbers prior to that.

I hope that explains it.

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Q But the documents were completed on or about the date they bear?

A In their present form, yes.

Q Let us then start with Exhibit No. 3, since you started three, four, six, seven, eight, nine at about the same time.

A Okay.

Q Do you have Exhibit 3 in front of you, Mr. Brownell?

A Yes.

MS. OLIVER: That is the Mulligan --

THE WITNESS: Yes, it is.

BY MR. PHELAN:

Q Taking Brownell Exhibit 3 as a whole, can you tell me how much time you spent on this document?

MR. HYNES: I take it work relating to that document, not the actual preparation.

MR. PHELAN: Yes.

BY MR. PHELAN:

Q You mentioned yesterday you spent some 150 hours to date.

THE WITNESS: I believe I said 120.

Q One hundred twenty, all right.

Brownell - direct (Phelan)

187

How much of that time did you spend on Brownell Exhibit No. 3?

A I would have to tie document three and document nine together.

Q You cannot distinguish the amount of time spent on three versus nine?

A No, I'm sorry. I did not keep my time notes.

Q How much time did you spend on Deposition Exhibits 3 and 9?

A I would say approximately 60 to 70 hours.

Q With respect to Deposition Exhibit 3, how much time did Mr. Mulligan spend?

A My recollection is that he spent about 100 hours.

Q Did any other person work on Deposition Exhibit No. 3 other than yourself and Mr. Mulligan?

A I believe so.

Q Who is that?

A I would have to check exactly but I believe Mr. Millspaugh, M-i-l-l-s-p-a-u-g-h, and Mr. LaBarba.

Q Spell that, please.

A L-a-B-a-r-b-a.

Q Mr. Millspaugh's special expertise is what?

A They are both civil sanitary engineers.

Q How much time would they have spent on this document?

A I am sorry. I don't have that at the tip of my tongue.

Q The document appears to bear some numbers at the bottom following the first three pages. Did you paginate those or did someone else?

A Excuse me?

Q Did you paginate --

A I don't understand the word paginate.

Q Did you put the numbers at the bottom of the pages?

A Thank you.

No, I did not.

Q Do you know how many pages there are to this particular exhibit?

A I believe there are 56.

MR. PHELAN: Would it be all right, Mr. Hynes, if we accept the witness' statement that there are 56 pages?

MR. SCHINK: There are 59.

MR. PHELAN: Plus the first three and we can verify it later.

MR. HYNES: Sure.

BY MR. PHELAN:

Q Deposition Exhibit No. 3, for the record subject to verification, consists of 59 pages.

The first three pages appear to be a summary of the information contained thereafter. Did you prepare any part of the first three pages?

A No, except insofar as they were following the information that I had laid out in document number nine and I had relayed to Mr. Mulligan, the options that I thought were most appropriate to look at, that I wanted him to put cost to.

Q Let us take a look then at Exhibit 9.

Exhibit 9 as with 3 were begun at or about the same time?

A That is correct.

Q According to their dates, completed on one day apart?

A That is correct.

Q Now, the relationship between Exhibit 9 and 3, I am referring now to deposition exhibits, 9 gave

the direction to Mr. Mulligan as to what you were looking for as to alternatives?

A Well, the information contained in paragraph one of Exhibit 9 had been given to Mr. Mulligan earlier in a verbal fashion so that he was then able to develop his memorandum.

Once I had seen what he had, I was then able to complete the memorandum, Exhibit No. 9, forward it to Mr. Henningson for him to look at.

Q What about b of Deposition Exhibit 9. When did you --

A B?

Q Yes.

A I'm sorry, which of the B?

Q The small b.

A Before the word harbor?

MR. HYNES: His answer was just paragraph one he is talking about.

BY MR. PHELAN:

Q That includes both a and b.

A Yes. There are a lot of Bs on there.

Q When did you decide that only the alternatives listed in 1a would be evaluated for purposes of the

North Ditch/Upland?

A Some of these options we had decided to look at from the beginning.

Q Which ones were those?

A No action, stabilization which was number two; part of 3A and that's a3A; parts of a3B, 4 and 5; all of 4 and 5.

Q Those were decided on at the beginning?

A Pretty much. The changes were that as we went into it more, we felt that it became clear where the PCBs were in my mind, anyway, that it might make some sense and would be quite feasible to have a limited removal of a portion of material in there, where the data clearly without any doubt at all, says there are PCBs.

Q Were there any other remedies that you considered mentally but did not decide to evaluate?

MR. HYNES: You are talking again about the A portion, North Ditch/Upland?

MR. PHELAN: Yes.

BY THE WITNESS:

A Yes.

BY MR. PHELAN:

Q Where were those?

A I did consider mentally, the possibility of using the sodium Na PEG.

Q Why did you decide not to evaluate that?

A It has only been utilized for low levels of PCBs in soils and my recollection of the process indicated that it was not effective based on the limited research done to date on it. It was not effective when the moisture content got much above 25 percent and since it was innovative technology, that to the best of my knowledge has not been applied on a full scale basis anywhere, it did not seem appropriate.

One of the reasons I even thought of it was that the project that we have in the Buffalo area, we have filed an application and tried to use it there with the US EPA. I don't know that we will get approval on that application. It is a demonstration project prior to having to implement the order that we have from the State of New York. The material is drier, small quantity of it with lower level PCBs.

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Q Maybe you better describe briefly what this sodium peg process is.

A The best of my recollection, the process relies upon a sodium polyethylene glycol-type compound which is formulated by reacting sodium with the polyethylene glycol. The resulting material is quite viscous, is diluted with alcohol and then can be applied to sediments

The sediments probably should be removed from their original place and handled and placed in a plastic liner or some protective liner and then this material is mixed in with the soil sediments and it is claimed that the sodium is able to strip the chlorine or at least part of the chlorine off the biphenyl molecule; hence reducing the amount of PCBs that is present in a sediment sample or a soil sample.

Q Have you ever actually seen a demonstration of it?

A No.

Q Has anybody at Malcolm Pirnie ever seen a demonstration?

A I don't believe we have. We evaluated it for another project.

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Q Are there any reliable reports of its efficaciousness?

MR.HYNES: I assume you mean reliable in his opinion.

BY THE WITNESS:

A I have difficulty in defining what you mean by reliable. One of the reasons that I dismissed it is it is not a demonstrated process and after I thought about it, it did not seem applicable to this particular situation. Once it is demonstrated, then I would feel that it should be looked at again, in my mind, for the appropriate place, which I don't believe is here.

BY MR. PHELAN:

Q Are there any other remedies or options that you mentalized but didn't actually evaluate?

A Not really, nothing that is not already reflected in some shape or manner in those options.

Q You used the term stabilization and stablize throughout the papers. How do you define that term?

A To minimize the movement, the potential for movement and in this particular case in the North Ditch/Upland area, we were thinking in terms

of filling in the low spots and either capping them or paving them to prevent rainfall and/or stormwater from having access to the PCB contaminated soils.

I guess you could say we briefly thought about adding cement, other techniques to that area, too, but I dismissed that in favor of capping and covering.

Q I take it the details of the minimization of movement are carried forward in Deposition Exhibit 3.

A I believe they are, yes. I would be happy to discuss them more with you.

Q 3A is to stabilize and limited removal of hot material.

A Yes.

Q I assume you defined the PCBs as a "hot material".

A Yes.

Q You are saying 13,500 cubic yards?

A Yes, that would be the upper limit. It might be as low as 10,000.

Q Was it you who decided on 13,500 cubic yards?

A It was me.

Q How did you arrive at 13,500 cubic yards?
This is just from the North Ditch/Upland area?

A That is correct.

Q Before you answer that, maybe I ought to ask you this: What do you define as the Upland area? How far west?

A Everything that is in the parking lot, the Crescent Ditch, North Ditch.

Q Parking lot, Crescent Ditch and --

A North Ditch and I would say to the western property line of OMC, but not including the Harbor or the vacant parking lot area -- to the vacant lot area to the east of the Harbor.

Q Is that the only part you are excluding, the vacant parking lot east of the Harbor?

A I'm not sure -- well, in the area to the west of the Harbor also and to the south of the Harbor and to the north of OMC's property line.

Q Will you tell us how you decided 13,500 cubic yards?

A Certainly. I had one of my staff plot up the information, a map and we looked at it, he and I looked at what we thought were reasonable areas

that might be influenced, what the data might represent relatively to be a reasonable area.

We then took an average of the data as it existed in the vertical plane, by that average to the area of influence. If there were several data points, then we had several influences and we were then able to use them.

Q Is there any paper contained in Deposition Exhibit 3 that shows how you used this data and how you found this vertical plane and those points of influence?

A I don't believe so.

Q Can you describe in another way for a lay person how it is that you decided or reached the conclusion that 13,500 cubic yards of material would be removed from the areas excluding the ones that you mentioned?

A We made some rough calculations which came out to be about 9,000 yards and then on the assumption that we might have to dig some of them out with sheet piling and I applied a 60 percent slump factor or thereabouts and came up with about 13,500.

Then I asked Mr. Mulligan to put together

some cost estimates to remove that material and look at whether the sheet piling would work and would make more sense economically and perhaps review the yardage. And that was what he was able to come up with and in his memo, I believe, I assume we are talking about 10,000-plus yards. I think that is an estimate.

Q Can you give us kind of a graphic illustration of what 13,500 cubic yards area amounts to. If you took a football field and filled it with the material you were removing, how high would we have to go to get to the 13,500 cubic yards?

A That would require a calculation.

Q Could you give us any kind of a ballpark idea?

A I would have to recess and to make some calculations to give you one.

Q If you take a regular football field, 100 yards by 50 yards --

A I don't know what a football field is. That is one of my problems.

MR. HYNES: One hundred yards long. Now, if it is 50 yards wide -- why don't we just assume it

is 50 yards wide.

THE WITNESS: With or without the end zone.

BY MR. PHELAN:

Q You can't give me any idea if we pile that up in a football field, how high you could go?

A I would be happy to but I would like to recess and give you a calculation.

Q You have no idea as you sit here right now?

A Not as I sit here right now, no. My mind is a total blank on that particular question.

Q The third option there is to dispose of it in b2A or b6, which is remove any dewatered material from a3A and 3D and incinerate.

A Yes.

Q And dispose of ash off site. I presume from this, incineration off site. Is that what you are suggesting?

A Yes.

Q Under 3B, you say stabilize and limited removal to b3.

A Which would be A, B, C, or D.

Q Any one of the above?

A Yes, except D, it looks like. I will have

Q You have limited removal to b3 below --
is that A, B, C or D?

A No, not including D.

Q So that should be amended to include A,
B and C but not --

A Subject to my more intensive review.

Q On site encapsulation to 50 parts per million
(see B4) which is to dredge Slip 3 and Upper Harbor
and encapsulate in parking lot (see A4).

You are just cross-referencing it back?

A Yes. You see, what I was trying to do for
myself is make sure that it was clear that the options
which required removal of the material from its
current resting place to some other location, wherever
those options in one area like the Upland area were
compatible with an option in the Harbor of a similar
type, that we'd put them in the same cell or same
slip and the costs that we generated have certain
economies associated with them and we split the costs
up between the Harbor or the Upland area.

Q What you are suggesting on hindsight encap-
sulation to 50 parts per million is to remove the
"hot material" to a point where there is less than

50 parts per million and to --

A Enjoin it with the material that is in the case of a4, dredged from the Harbor and totally encapsulated.

Q Where would you encapsulate?

A It depends.

Q You say encapsulate in parking lot?

A Yes.

Q Where is that in the parking lot you would encapsulate?

A The entire parking lot.

Q Just so we are sure on the parking lot, which would do you have in mind?

A OMC's.

Q Are we talking about a couple --

MR. HYNES: He misspoke. It was the OMC vacant lot. He originally said parking lot and then he said vacant lot.

BY MR. PHELAN:

Q Is that correct, you are not talking about that?

A Not when I compare a4 to b4, I am not, but I will in others.

Q As far as a4A and B, what parking lot are you talking about?

A OMC's, its currently used lot.

Q That is the one that is east of the main office?

A I believe you can refer to a figure. If you refer to page 40, you can see the area that we are talking about.

Q I am looking at page 40 of Brownell Deposition Exhibit No. 3. What parking lot are you referring to?

A I am referring to the area that is between the North Ditch and comes down approximately several hundred feet, say 200 feet and all areas that are included in there.

Q Then you also suggest off-site encapsulation to 50 parts per million, b5?

A Yes.

Q And you reference that back to a5?

A Right.

Q You agitated about there in Deposition Exhibit 9?

A We had not selected a site but we believe

and a quick review of the existing terrain that one should be available within 20 miles of the Waukegan Harbor.

We also understand that the SEA has a landfill immediately to the north which would be far closer than that.

Q In that off-site encapsulation, did you have any information or did you obtain any information regarding whether there was a willingness on the part of State of Illinois to allow you to encapsulate off-site?

A No.

Q Did you ever inquire of anyone from the State of Illinois as to whether they would permit encapsulation?

A No.

Q How about Lake County. Did you discuss that with anyone from Lake County?

A No.

Q As you sit there now, do you know whether that is legally possible to have an off-site encapsulation site in the County of Lake or in the State of Illinois?

MR. HYNES: I don't know whether he is competent to say whether it is legally possible, but he can answer the question.

BY THE WITNESS:

A Ignoring the question of legalities, I would like to answer another way. I believe that virtually all the rules in the Hazardous Wastes Area allow an exception to allow an opportunity to challenge the rules. I believe personally that it should be possible, that it is reasonable and that it is feasible.

BY MR. PHELAN:

Q You admit, however, the uncertainty that unless the State of Illinois allows it, it cannot be done?

A Ultimately, if the State of Illinois prevails all arenas, then I would assume you are correct.

Q Have we discussed all the alternatives for the North Ditch/Upland area that you either thought about and did not evaluate, thought about and did evaluate?

A I believe so.

Q Dropping down to b in the Harbor, 1: No

action. The second one under 2 is Fill Slip 3 with hot sand from a3 above.

Now, a3 above is the stabilization, I assume, of the North Ditch/Upland area.

Can you explain to me the relationship between the hot sand and a3 above?

A Certainly.

As I indicated in paragraph 1A, 3A, 1A and 3B above, the first action listed is to stabilize the area, plus we would consider a limited removal of 10 or 13 or 14,000 cubic yards.

The material that is removed has to be disposed of in the proper manner somewhere and what we have done is said that in paragraph 1b, 2A, that we would take that material from the North Ditch/Upland area and put it into Slip 3.

Q The hot sand that you referred to there is actually the "hot material" you referred to above?

A It is the material that I referred to in paragraph 1a3A, 3A and 3B.

Q You use hot sand in one area and material in the other. Are they the same?

A Yes, the hot sand and the hot material are

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the same.

Q Dredge silted area from B-1.

Will you explain that to me?

A Yes. That refers to the grid system that Mason & Hanger used in mapping the Harbor area.

They have a segment called Upper B-1 which is the northernmost part which I have been referring to as the Upper Harbor which is that area between Slip 1 and Slip 3, but not including Slip 3 or Slip 1.

Q The B-1 reference to lb- 2A is a reference to another document contained in the Mason & Hanger report referred to as Upper B-1 which is an area between Slip 3 and Slip 1, but does not contain Slip 3 and Slip 1?

A That's relative to the Mason & Hanger terminology. However, when I fill in Slip 3 as was indicated on one of the figures here, it was cross checked with the Mason & Hanger grid system. You will find that I am enclosing part of Upper B-1 also.

Q Is it your suggestion here that the silted area from Upper B-1 be dredged and that material be placed also in Slip 3 with the "hot material" from above?

A That is correct.

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Q How much material would you dredge from the silted area described in the Mason & Hanger report as B-1?

A Approximately 500 cubic yards.

Q How did you determine the 500 cubic yards?

A We relied on sounding information and the evaluations we did of the various water levels where the muck was. I believe you can get a feel for it if you look at the figures that are part of my Exhibit 7.

Q What was the source of the sounding information?

A I would have to check exactly which document or documents we used.

Q What formula did you use for the 500 cubic yards?

A We used simple geometry.

Q What is the simple formula in geometry that you used?

A Let me compose myself.

I'm ready.

Q Okay.

A You take the height, the width and the depth

of an area which you feel should be moved, multiply those three components together and you get a volume.

That is how we did it.

Q In this Upper B-1 area which refers to the Mason & Hanger report, you are referring to removing PCB materials or simply removing sediments in the Harbor for purposes of navigation?

A We are talking about both.

Q What is the reason why you would remove these materials from the Upper B-1 area of the Mason & Hanger report?

A We would remove the materials -- well, it is my opinion that PCBs that can be efficiently and economically removed should be so that we don't have to worry as much and therefore can reduce the risk associated with the movement of PCB material out of the Harbor and also the potential for sudden and unusual losses from a sudden event.

With that in mind, once we dredge, it is very economical and easy to go down and remove all of the material and restore the full useful depth of the Harbor. I would consider restoring the full depth of the Harbor anyway and therefore, once we

do that, we are removing all of this material and some of it definitely has PCBs in it.

Q However, that is basically a navigational element rather than a solution to the alleged PCB problem.

A I disagree.

Q The second part of 2A is to dredge about 20,000 cubic yards from the Upper Harbor.

A Yes.

Q That is in addition to the 500 cubic yards?

A Yes.

Q In addition to the 10 to 13,000 cubic yards from the North Ditch/Upland area?

A Yes.

Q Again, how do you determine the dredging of about 20,000 cubic yards from the Harbor?

A Once I put in 10 to 13 to 14,000 cubic yards of hot material from the Upland area and once I put in 500 or so cubic yards of material from B-1, my calculations indicate that 20 to 22,000 cubic yards of material still could be placed in there and completely fill up Slip 3.

Q If we can relate Slip 3 to a football field,

we can figure out how much 13,500 yards is?

A I know the area of Slip 3 is 1.6 acres as we are working with it. You can relate it to that. It's possibly only a few feet, probably --

Q You have used Upper Harbor as opposed to B-1, which is also the Upper Harbor in the Mason & Hanger report.

A Yes.

Q What do you consider to be the Upper Harbor for the purposes of 1b2A?

A It is as I defined it before.

Q Is it the same as the one in the Mason & Hanger report?

A Yes. When I say Upper Harbor, it's from that area.

Q The area that is above there, dredge silted area from Upper B-1, B-1 is a defined area in the Mason & Hanger report?

A Yes.

Q Now, is this Upper Harbor that you used below the same area?

A No, it is the same area that I used when I described my definition of the Upper Harbor earlier,

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a few minutes ago.

Q I am confused. You say in 2A, you want to dredge silted material from Upper B-1 and you define Upper B-1 as that portion of the Mason & Hanger report which had a denomination, B-1.

A Yes.

Q Is that the same area you describe below when you say "dredge about 20,000 cubic yards from Upper Harbor"?

A No.

Q What is that area?

A The area in the Upper Harbor is the area that is from Slip 1 to Slip 3, not including Slip 1 or Slip 3.

Q Is that what I understand the Upper Harbor -- what is it that you understand the Upper B-1 to be as it is shown in Mason and Hanger?

A Upper B-1 is part of the Upper Harbor.

Q But it does not include the part of the Upper Harbor that you just described?

MR. HYNES: He said it also includes that.

BY THE WITNESS:

A I said it also includes that. We are talking

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Q Now, is the Upper B-1 again the Mason & Hanger B-1 and the rest of the Harbor as you have described it?

A Not quite. The rest of the Upper Harbor would consist of about 38,000 cubic yards of material and would include all material that was above 50 ppm in concentration PCBs and would be that area from Slip 1 to Slip 3, but not including Slip 1 or Slip 3.

In that case, he should have no problems because it is the entire area.

Q How many cubic yards do you estimate the dredger would have to take out of that?

A I believe I said 38,000, minus the 500.

Q What is the reason why you believe that area ought to be dredged?

A I believe that there are PCB materials in there which contribute to the flux of PCBs out of the Harbor, and there are PCB materials in that reach which could under a sudden event, be moved out of the Harbor.

I believe that at some time that that area will have to be dredged to restore the Harbor and I

believe that it is a distinct possibility that that area will have to be dredged sometime to restore the Harbor to its full use.

I cannot exclude in my own mind, the possibility that in the future, that someone will not want to move deeper vessels up the Upper Harbor than are currently going to Larsen Marine.

Q What is the basis for your believing there are PCBs in this Upper Harbor area that are in excess of 50 parts per million?

A The basis are the data that have been collected by others and that I have reviewed.

Q I'm sorry?

A There have been data collected by Mason & Hanger or under their aegis.

Q Can you tell me specifically what data it is that in your opinion, requires the conclusion that there is more than 50 parts per million in the Upper Harbor area?

A I would have to review the documents if you wish the exact series of pages and everything else. I would be happy to do that for you.

MR. PHELAN: I think that for the record that what we may have to do here, Mr. Brownell, is to

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have you, the source materials for your conclusions so that I can examine you on those source materials.

There is no way I can at this point, examine you on the bases for your opinion if you cannot tell me what specific material you relied upon, either because it is not here or because you cannot recall.

MR. HYNES: He has already stated part of it was the data that was generated under the auspices of Mason & Hanger and others and it is the chemistry data, sampling in the Harbor.

You have had copies of all that and do have copies of all that and I don't see why he has to bring them when you have copies of them and have had for a period of time.

MR. PHELAN: The problem is this: He has listed a number of options here and on examination here, we find he is relying on certain materials. I had no idea what materials he was relying on until I just asked him the question and in order for me or anybody else to examine him, I would have to have all the materials behind me here in order to examine him and at this point, I don't know what data he believes requires this conclusion that we should

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dredge the Upper Harbor to the extent of 38,000 cubic yards.

BY MR. PHELAN:

Q I take it, Mr. Brownell, that you can go back to the Mason & Hanger report and pull from it those pages or that data which support your conclusion.

A Yes, that's correct.

Q I would ask you to do that for tomorrow so that I can determine the basis for it.

I would also ask that you bring a map of the Harbor or any other graphic description of it so that you can show us what portions of the Harbor you are referring to here for your alternatives.

Can you do that?

A I believe I can use -- I can find a map that represents the Harbor.

Q Also that portion of the Mason & Hanger report which is denominated as B-1.

A Certainly.

Q 3A, 1b3A, dredge Slip No. 3 and Upper B-1, and place hot sand (see a3 above) -- is that the hot material you have reference to?

A Yes, that's correct, as discussed previously.

"(see a3 above.)". That incorporates both 3A and 3B?

A Yes.

Q For the record, all of these references are on Brownell Deposition Exhibit No. 9, page 1, so it is clear for the record where I am reading.

I would like to go back then to 1b3A: "Dredge Slip 3 and Upper B-1 and place hot sand (see A-3 above) from North Ditch and encapsulate in vacant lot."

You say place the hot material from the North Ditch. You are referring to the North Ditch and all of the other areas you included in North Ditch and Upland?

A The amount of material we are talking about is the 10- to 14,000 cubic yards from the North Ditch/Upland area plus the material we dredge from Slip 3 which would be, as I recollect, about 10,000 cubic yards also.

Q Then you would encapsulate that in a vacant lot. What vacant lot are you referring to?

Page 40?

A Yes, if you refer to 40, I believe I can describe it.

It is that area which is labeled Vacant

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Outboard Marine Corporation property.

Q All right.

For the record, Mr. Brownell, you are now referring to page 40 which is a very broad schematic of the Waukegan Harbor which is part of Brownell Deposition Exhibit No. 3 and to an area immediately east of the Harbor, south of the Larsen Marine and north of Johnson Outboard's Plant No. 1 as it is denominated, described as vacant Outboard Marine Corporation property, is that right?

A Yes, sir.

Q First, can you give me an estimate now as to what the amount of material that you would dredge from Slip 3, Upper B-1 and from the North Ditch/Upland area?

A Just let me check something.

Yes, I can.

From Slip 3, we would dredge approximately 10,900 yards; from Upper B-1, approximately 500 yards and we would remove approximately 10- to 13,000 cubic yards from the North Ditch/Upland area.

Q You are talking roughly of about 24,000 to 25,000 cubic yards?

A That is correct.

Q How much material would you remove from the parking lot or the vacant lot there which we have described?

A We would try and remove a minimum amount of material.

Q Would you encapsulate below ground or above ground?

A Above ground in this option.

Q The encapsulation detail, is that found in Exhibit 3?

A Well, I can describe it for you. There are cost estimates and other information relating to it.

Q Just generally what you mean there by encapsulation?

A We would build, would recommend that someone build a landfill which would be lined on the bottom. This would be a shell that would receive the dredged material and would also receive the material removed from the other areas.

The dredged material would flow into this containment cell. It would then overflow the liquid,

would overflow the containment cell into a water treatment plant which would by addition of flocculent aids, reduce the PCB concentration to a level which would allow that liquid to go back into the area that is being dredged.

Once the material is all placed in the containment cell, it would be dewatered. The water that could be removed would be removed.

We would then take the material that was part of the water treatment plant, place it into the containment cell and then cover the entire area.

We would protect the east flank with riffraff to a level of about two feet below grade and four feet above grade and we are talking in terms of clay materials for capping. And we would have on top of the clay tap, topsoil and other materials to allow the growth of a grass cover and then the facility would have to be maintained.

Q Just from your memory, can you tell me what that would cost?

A That containment cell alone?

Q Yes.

A My recollection is that that one would cost

-- I would have to check just to make sure but I believe that that part of the project which is not the entire project would be about a million dollars to a million and a half, somewhere in that range.

I would like to take a look when we discuss the numbers in more detail.

Q Will you describe for us what you mean when --

A I think a million and a half was a better number.

Q When you described the alternative under 1b3A --

A Excuse me, could you repeat the question?

Q Have you now described for us what you mean to be under 1b3A of Brownell Deposition Exhibit No. 9?

A I believe I have given you a general description.

Q Is that encapsulation containment cell as you called it defined in these documents as you have just described it?

A No, it is not.

Q All right. It --

A It is succinctly summarized, I believe on the second page, page 2 of Exhibit 3.

Q Page 2 of Exhibit 3?

A Yes.

Q 3C?

A I would say B-3a.

Q If you were a contractor and you wanted to determine whether your numbers were reasonable or unreasonable or accurate or inaccurate, other than the description you have just given us on the record here, is there any document, drawing, a specification that would give such a contractor a basis from which to determine whether your opinion of the cost was reasonable or unreasonable, accurate or inaccurate?

A I think this would be a perfect document for him to make that assessment.

(Whereupon Mr. Fort left the deposition room.)

BY THE WITNESS:

A Now, you have to consider that you are talking about a rough estimate that the contractor would make and not a detailed estimate that he would make once detailed design documents were completed,

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so that assumption must be added to the premise that you proposed.

Q Have you anywhere seen a containment cell such as you have described, built?

A I believe a very similar containment cell was built on the Upper Hudson Moreau site.

Q It has been built?

A Has been built, yes, sir.

Q Would you spell that for us?

A M-o-r-e-a-u.

Q Was it of the approximate same size and dimension?

A I can check. I think it is in the approximate -- no, I take it back. The Moreau site was for almost 200,00 yards.

Q Do you know what that cost to build?

A I'm not sure. Let's just see.

It's in the millions.

Q What are you referring to, Mr. Brownell?

A I am referring to document four.

Q Deposition Exhibit Brownell 4. What page is that?

(Whereupon Mr. Fort returned to the deposition room.)

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A I am referring to page 22.

Q What was the cost of that?

A It was approximately 228,000.

Q When was that built?

A 1977.

Q That is on page 22 of Deposition Exhibit
No. 4?

A Yes. It did not have a water treatment
plant. That was built with different standards in
mind, the standards that existed or didn't exist
at that time.

Q 1b3B is "3A plus 20,000 cubic yards more
from Upper Harbor."

Again, tomorrow you will bring with you a
map or a plat or diagram or schematic of the Harbor
so we know what areas you referred to here now in
the Upper Harbor?

A I will bring a drawing of the Harbor, yes.

Q We will mark that for the record so we have
a clear idea of exactly where it is you are going to
dredge.

A I can give you an approximate area we are
going to dredge but I do not have a drawing with me

which shows exactly every cubic inch.

Q I appreciate if you would bring a drawing we can mark and you can initial showing what it is you have reference to when you say 20,000 cubic yards more from the Upper Harbor.

A Fine.

Q 1b3C is Dredge Slip 3 plus Upper Harbor plus the hot sand.

Let me back up. Do all these three remedies include this containment cell located in the vacant lot east of the Harbor?

A Referring to 3A, B, C, and D?

Q Yes.

A 3A, B, C, D, yes.

Q So we would add, 1b3B is 3A plus 20,000 cubic yards from the Harbor and encapsulating the vacant lot.

A Yes.

Q Under 3B, how much material are you dredging and placing in the containment cell?

A 38,000 cubic yards from the Upper Harbor plus the 10,900 cubic yards plus the 10- to 14,000 cubic yards from the North Ditch/Upland area.

Q For a total of how much?

A Excuse me. It does not include the last 10- to 13- to 14,000 cubic yards. We are not in this option, taking material out of the North Ditch.

(Enter Mr. James White.)

MR. PHELAN: Let's take a break.

(Discussion off the record, after which all parties present in the deposition proceeded to Judge Susan Getzendanner's courtroom for a hearing on a motion, subsequently returned and the following further proceedings were had herein:)
(Mr. Phelan left the deposition room.)

MR. HYNES: For the record, I understood the Judge saying we should go all day today and obviously you have a different understanding of what she said up there.

MS. OLIVER: Right.

MR. HYNES: I object to your not going a full day today with Mr. Brownell and only going another half hour or so after we come down from Court. So I think that is not what the Judge's order contemplated or her statement contemplated.

MS. OLIVER: We explained to the Judge what the situation was and what the plans were and I think she agreed that was the best way to go, under the circumstances.

MR. HYNES: I think that we were all directed to go to the end of the day with him. It is now on the record what our respective opinions are.

MS. OLIVER: All right.

MR. HYNES: We contacted Mr. Henningson and he will be here tomorrow starting at ten.

DIRECT EXAMINATION - (Resumed)

BY MS. OLIVER:

Q Mr. Brownell, do you have any papers with you that are not the same as Exhibits 2 through 9?

A No, I have nothing with me.

MR. HYNES: Do you mean like drafts or something of these documents?

MS. OLIVER: That are different from what we have.

BY THE WITNESS:

A No, these represent everything I have.

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Q You have your own copies with you of the deposition, right?

A Yes.

Q You mentioned earlier in your testimony today that one of your recommendations on dredging the Harbor would be to restore the full use of the Harbor, is that right?

A The full use, yes, full uses that might be enjoyed now or in the future.

Q Is it your understanding that the Harbor is not being used to its full use presently?

A Well, certainly in regard to the fish. Fishing is banned in the Harbor so that is one use that is limited.

It is also my feeling that at the present time, navigation is limited in Slip 3 from the siltation that has already occurred.

Q With respect to fish, fishing in the Harbor, do you know what fishing occurred in the Harbor?

MR. HYNES: Occurred prior to the ban?

A Right.

BY THE WITNESS:

A No.

BY MS. OLIVER:

Q Do you know whether any fishing took place in the Harbor?

A Mr. Henningson can address that better than I can.

Q You don't know?

A Well, to my understanding, people fished in the Harbor, yes.

Q Do you know what type of fish?

A Sorry.

Q With respect to navigation, what is your feeling that it is being restricted based on?

A In discussions with Mr. Larsen and also looking at the muck levels that have been recorded.

Q That is with respect to Slip 3?

A Slip 3 in the Upper B-1 area.

Q How far in the Upper B-1 area is navigation restricted?

A It really has to do with trying to put boats that draw a certain depth of water when they are docked or trying to dock or move around.

Q Did you get this information from Mr. Larsen?

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A Part of this information I gathered from looking at the soundings as to where the muck levels were and in discussions with Mr. Larsen, I asked him what draft the boats have that are commonly docked, maintained or sold there and he indicated they are generally in the six-foot range but there are several in the eight-foot range.

Q Did he tell you that his business was being restricted in any way?

A I didn't ask him that question.

Q Did he tell you his use of the Harbor was being restricted in any way?

A I didn't ask him that question.

Q So your opinion that the use of the Harbor is being restricted is based on the soundings that you have seen?

A It is my interpretation of all the material I have had at my use.

I am more concerned about the future restrictions as more silt comes in and when the water level drops to the historical lows, historical being in the last several decades.

Q Do you know whether any dredging has been

done in the past in Slip No. 3?

A It is my understanding that dredging has been done in Slip 3.

Q Who has done the dredging?

A I believe Mr. Larsen has arranged for the dredging.

Q Do you know when the last time was he dredged Slip No. 3?

MR. HYNES: I think that was asked and answered, but you can go ahead and answer.

BY THE WITNESS:

A I believe about ten years ago.

BY MS. OLIVER:

Q Do you know about how often Mr. Larsen dredged Slip No. 3?

A I believe it's been dredged several times.

Q Since when?

A Since World War II.

Q Do you know whether the Upper Harbor region that you are referring to in your deposition was dredged?

A I don't recall.

Q Do you know whether the Corps of Engineers

does any dredging of the Harbor?

A Yes, the Corps of Engineers' people do dredging in the Harbor.

Q The Corps of Engineers does dredging in the Harbor?

A They arrange for the dredging.

Q Do you know what area in the Harbor is dredged through the Corps of Engineers?

A Yes. It is my understanding, anyway, that the area from Slip 1 down is dredged, normally by the Corps.

Q Do you have any information that any part of the Upper Harbor between Slip 1 and Slip 3 has been dredged in the past?

A I have no recollection. We may have it, but I don't recall.

Q You don't know whether any maintenance dredging has ever been necessary in that part of the Harbor?

A As I indicated, I have no recollection as to exactly what has occurred there.

Q You also mentioned that you were concerned that bigger vessels might not be able to get into

the Upper Harbor. What type of bigger vessels are you concerned about?

A I would see no reason that the vessels that are now going into Slip 1 could not be accommodated in the lower bulkhead of the Upper Harbor.

Q What type of vessels now go into Slip 1?

A I believe that on occasion barges and other vessels go in there, some of which may draw 15, 18 feet of water.

Q What would be the purpose of those barges going into the Upper Harbor?

A I see no reason why the present owners of the property could not come up with another technique of offloading the barges. There may be a reason in the future to use that bulkhead that they now own in a different fashion.

Q You are referring to the owners being Larsen Marine?

A No, the owners being National Gypsum.

Q They may in the future at some time want to move bigger barges up into the Upper part of the Harbor?

A It is my feeling that I see no reason why

6
that shouldn't be considered as one of the possibilities.

Q Have you investigated that possibility at all, to see its probability?

A What do you mean in the way of investigating?

Q Have you talked to anybody, looked at anything, done anything more than thinking about it.

A I have thought about it and I would say I have not talked to National Gypsum, for instance.

Q Do you know how long National Gypsum has operated in that area?

A Approximately two decades.

Q Is Slip 3 big enough to accommodate a barge?

A I would think it could accommodate some barges but I wasn't concerned about Slip 3 relative to barges.

Q So you are not concerned that barges might want to come into Slip 3 and be stuck in the sand or soil?

A Well, it is a possibility that vessels larger than are presently going in there may want to go in there for some reason, but specifically a barge was not something I really thought seriously about unless National Gypsum or some other future

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owners decided to enlarge Slip 3 because they wanted access on three sides.

Q From the investigation you have done to date, how big can the boats, whatever, be to get into Slip 3 without any difficulty at all now, presently?

A They would have to draw less than six feet of water.

Q If they draw more than six feet of water, what would happen?

A I would expect they would have difficulty turning. I would expect that they would in some cases, specifically if they draw too much water, they are going to have difficulty moving.

Q How much more would they have difficulty moving in?

A I'm sorry. I don't understand the question.

Q How much more than six feet would cause them to have difficulty moving?

A I have no opinion on it.

Q For navigational purposes, how much and how deep should the dredging be in Slip No. 3 to achieve the navigational goal?

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A When you dredge, I would think in my mind at least that you should dredge to quite a depth so that you don't have to come back in and do it every couple of months or couple of years, so that for navigation purposes alone, you would go many feet.

But as soon as you start doing that, you start getting into the PCB areas if you don't get into them sooner and I would think on that basis, once you start, you really have to go in and take out essentially all of it. That goes down to the sand layer and into the sand layer. I would just take all that out.

Q All meaning what?

A All of the material which is contaminated with PCBs or might likely be contaminated with PCBs in that area.

Q How deep would you have to go to do that?

A On an average of probably about 15 feet; in one or two places, even deeper.

Q Would you go into the sand layer?

A Yes.

Q How deep into the sand layer?

A Several feet.

Q How would you determine where you would

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go into the sand layer and where you wouldn't have to go into the sand layer?

A There is a fair amount, a large amount of data now on PCBs in the Slip and I believe in my opinion, most of it indicates that the silt layer, the muck layer is quite contaminated with PCBs and the sand layer or a foot or two is contaminated.

In a dredging operation, there are two ways among others, I would say, two ways to look at it. You can go in and based on the data, make a sweep of the area down to the level that you think. You then go back in and sample to see what the results are and come back in and do any policing action that is necessary, or you can take samples of the materials that is coming out of the dredge, discharge piping or out of a dredging operation and sample that material and see whether it is declining in value. That would dictate what you might then dredge the next day, for instance, or the day after.

Q Which method is preferable from an environmental engineering point of view?

A I have a preference for dredging and

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then going back in and testing and seeing what's left.

Q So you would dredge the area and then go back in and test to determine what PCBs are left?

A Yes.

Q Then you go back and redredge if necessary?

A The dredging operation is going to go over a period of days if not weeks, depending on how much is dredged, and I don't believe there would be any problems to take samples and results turned around in a few days so that you could have the results in a timely fashion while the dredge is still mobilized in the area. And you can go and selectively go on to the few small areas which could be left that might warrant further dredging.

Q You would expect, wouldn't you, there would be areas left?

A Yes, I would expect there would be a few minor areas left, yes.

Q To what level would you want to get down before you would say this is final, we can take our dredge and leave?

A Well, I think the approach that has to

be looked at is to try and remove the overwhelming majority, the large very high percentage of PCBs that are there. So that if we are shooting at, say removing 95 percent of the material, PCB-contaminated material which is in that slip, then we would have accomplished a lot and the flux that results from pushing the PCBs out of the sediment into the water column and hence out of the Harbor would be markedly reduced.

Q You would expect to get a 95 percent dredging efficiency?

A I don't understand what you mean by dredging efficiency.

Q Would you expect to get 95 percent of the PCBs dredged out?

A I would think that is reasonable and objective, yes.

Q Have you talked to any dredging people --

A Yes.

Q -- about that dredging efficiency?

A Well, that is not a dredging efficiency the way I know it.

Q Have you talked to dredging people about

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the possibility of removing 95 percent of the PCBs?

A I haven't talked to them about that, no. I wouldn't think it would be in their area of responsibility on a project nature.

Q Would you expect to leave five percent in Slip No. 3?

A I wouldn't be surprised if there were a number in that range, no.

Q Who is going to set the goal, the limit which is acceptable to leave in Slip No. 3?

A That is a question that I think can be answered once you have a full understanding of the public health and all the other problems that are associated with this particular site.

From an environmental engineering point of view only and ignoring all of the other aspects of that case, which I cannot give expert testimony on, but which would certainly influence the extent of the remedy that would be required, but only looking at it from an environmental engineering point of view, I would think that that would be a reasonable goal and that is my opinion.

Q I take it you have not been asked to do design documents on any alternatives or options

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you have considered?

A That's what I indicated yesterday, yes, that is correct.

Q Looking at Exhibit No. --

A 3?

Q No, 9. You have listed your alternatives under 1a for the North Ditch/Upland and under 1b for the Harbor, is that right?

A Right.

Q Do you have an environmental engineering preference?

A I believe I discussed that yesterday.

Q Looking at a, which is the preference you have for the North Ditch/Upland area?

MR. HYNES: Objection, asked and answered.
You can go ahead and answer.

BY THE WITNESS:

A Well, as I discussed yesterday, the first preference that I have is against certain options. I do not believe that no action is appropriate. I think some action is appropriate.

Once we pass that hurdle, then I believe that incineration of material is less feasible than

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other options.

BY MS. OLIVER:

Q Incineration is not listed under a, is it?

A No, but it is indirectly related to a, because I refer to 1a3B-b6 below, so you must discuss them in that fashion to keep it straight in my own mind.

Q I believe you said yesterday you had a slight preference for one of the options that you have listed.

A Yes.

Q Under a North Ditch/Upland, which of those six listed options do you have preference for for the North Ditch?

A As I indicated yesterday, I have a slight preference for stabilizing the North Ditch and removing some of the material that is there, the hot material and then putting it into Slip 3.

Q So you would refer to 3A, is that right?

A Right.

Q No. 1?

A Under 1a.

Q Under b, which is the option you would

use with 1b3A with the Harbor?

A As I indicated yesterday, I have a slight preference with all the other caveats I discussed yesterday for putting the material into Slip 3 and dredging the part of Upper B-1 which we discussed earlier and then moving more material in from the Upper Harbor so that it would be a slight preference for the b2A or 2B.

Q b2A is fill Slip 3 with hot sand from a3 above and dredge silted area from Upper B-1 and dredge about 20,000 cubic yards from Upper Harbor, right?

A That is correct.

Q And b2B is fill Slip 3 with Upper B-1 and rest of Upper Harbor, which refers to the 38,000 cubic yards?

A That is correct.

Q That you testified about.

As between b2A and b2B, do you have an engineering preference as to what should be done?

A No, I don't believe so.

Q So from an environmental engineering point of view --

A It may be in between, also. There are a whole subset of options which you could remove some of the material from the North Ditch and then dredge 20 and 38,000.

Q Is that your opinion about what should be done, or your preference about what should be done?

A Yes. As I indicated before, my slight preference is as described in my slight preference for stabilization and limited removal and 2A and 2B as you described them before.

Q My question is, is your slight preference to dredge 20,000 cubic yards from the Upper Harbor or dredge all 38,000 cubic yards from the Upper Harbor, or is it somewhere in between that we don't know about?

A I have an ever so slight preference.

Q To what?

A To 2A.

Q If we were asking you for your opinion, your ever so slight opinion as to which if any of these alternatives should be used in this case, you would refer us to 3A for the North Ditch and Upland and 2A under the Harbor alternatives, is that right?

A That's correct, with the understanding that there are many facets beyond the environmental engineering facets which would have to be considered before one finally made a decision.

Q But from your environmental engineering point of view, those two actions for the North Ditch and the Harbor are what you would recommend?

A That is what I have an ever so slight preference for, recognizing that there are still many other options which are still quite feasible in my mind.

Q Would you recommend anything?

A I am sorry.

Q Would you recommend any one of those options?

MR. HYNES: Any one of the --

MS. OLIVER: Thirteen, or whatever there are.

MR. HYNES: He has already stated he would not recommend the no action and the incineration.

MS. OLIVER: I know. I am asking what he would recommend.

BY THE WITNESS:

A I would recommend that any one of these be implemented, given the totality of the factors that have to be considered. They are all feasible.

MS. OLIVER: Off the record.

(Discussion had off the record.)

BY MS. OLIVER:

Q Let's consider for a moment, a combination of 1a3A for the North Ditch.

A Yes.

Q That is your slightly preferred alternative there?

A Yes, yes.

Q With 1b2B?

A Yes.

Q Dredging 38,000 cubic yards out of the Harbor?

A Yes.

Q If you use that combination for the North Ditch and the Harbor, where would you put the material removed from the North Ditch?

A I am sorry. You reached a good point: That if we do that, I would have to come back and

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just stabilize the material and not remove it.

Q So there are certain options you couldn't use with other options?

A That is correct.

Good, you understand.

Q It's only the beginning.

Let me refer a minute to your Exhibit No. 3 under the Preliminary Cost Estimates in several places under unit cost. There is an indication of LS. What does that mean?

A Lump Sum. That is a standard estimated term.

Q No unit cost or quantity could be determined, just a lump sum estimate was given?

A Yes, that is correct. I wouldn't say that none could be determined but it was determined that none should be determined.

Q Who compiled the cost estimates for you?

A Mr. Mulligan is the one that managed the development of this at my direction.

Q But who worked on developing the cost estimates?

A As I indicated to Mr. Phelan earlier this

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morning, Mr. Millspaugh and Mr. LaBarba and perhaps one or two other people.

Q One of your alternatives for the North Ditch involves creating a bypass, does it, a bypass pipe?

A Yes.

Q Do any of these documents indicate the size and type of pipe that you would recommend be used for that?

A No.

Q Have you considered what type and size?

A Yes. It should be, our initial feeling is it has to be a 36 or 48-inch pipe.

Q Why is that?

A We believe our rough calculations indicate that that will be the size that will be necessary to carry the storm water away from the area. My major premise for that is there is a pinch point in some of the existing culverts and we want to make sure we have at least that same area that is available.

Q What type of pipe would be used?

A I believe RCP, reinforced concrete pipe.

Q You mentioned to us yesterday and also today, a water treatment system.

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